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MINNEAPOLIS
ST. PAUL
SIOUX FALLS
SIOUX CITY
DES MOINES
DENVER
OMAHA
KANSAS CITY
NEW YORK
MAN
and his
ANIMALS
A Cardinal Biological Unit
"A word to the wise is sufficient."—Terrence
In making contemporary surveys of human estates, it is clever to notice the linkage between the human being and the animals he raises in the pursuit of higher economic standards, and to note concurrently how the husbandry of animals and intellectual levels have not only run parallel but kept pace with each other since time beyond record to the present day. The trend was forward or backward, depending upon the height to which that "cardinal biological unit" was developed.
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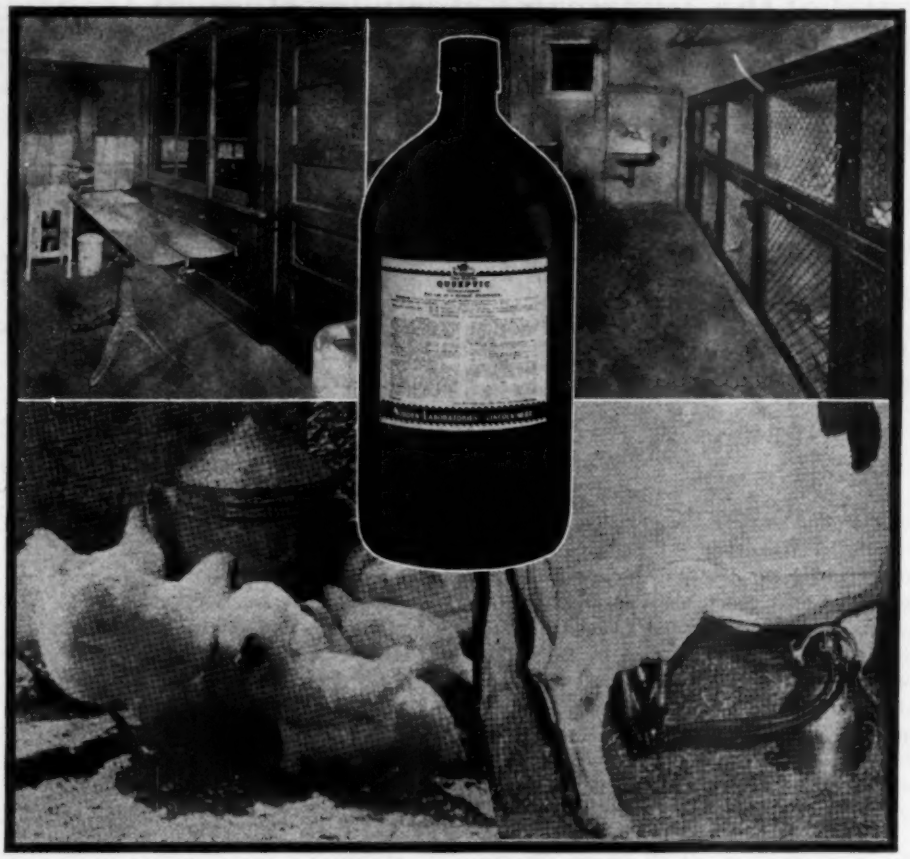

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WAY BACK WHEN

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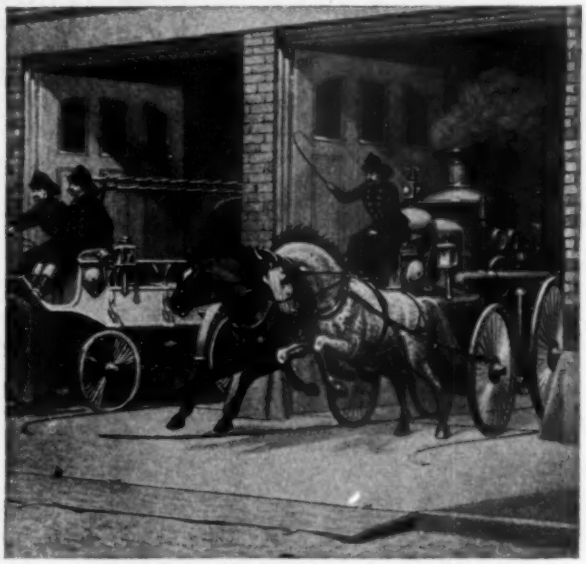

WAY BACK in 1912, when fire engines were still being pulled by horses, that's when companies which are now units of Allied Laboratories, Inc., adopted the policy that has steadfastly guided this organization since its inception, that of

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Veterinary Sanitary Problems of Air Transport

BENJAMIN D. BLOOD, D.V.M.
Washington, D. C.

AIR TRANSPORT is big business. Many of the problems accruing from the expansion of that industry are proportionately large. The epizoötiology of air commerce, as one of those problems, is a subject about which little has been written, yet it is of prime pertinence to the status of animal health in this country.

The air transport industry has reached its present development in an extremely short time. Its prewar popularity was limited largely by the premium rates charged. Within the past year, however, passenger fares have been reduced to the point that air transportation is now competing directly with surface transport. The advantage of speed with less personal discomfort, at costs comparable to other transportation methods, places the airlines in an enviable competitive position.

The war developed an awareness of air cargo. Huge quantities of materials were freighted on global aërial highways. The first postwar year has seen a phenomenal growth in the air-cargo industry. It has surged from a few certificated airlines apathetically allocating small amounts of passenger space for freight shipments to a separate air transport industry in which more big planes are used than were owned by all the passenger carriers before the war.[1]

AIR-BORNE ANIMALS

That indiscriminate transportation of animals by air constituted a menace to effective animal-disease control was exemplified in August, 1943. A sizable force of heavy bombers participated in what was

—Photo by Dan Frankforter

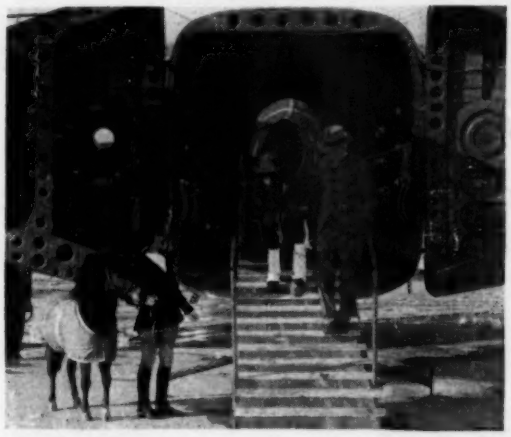
The C-82, or "Packet," is the first aircraft designed solely for air cargo use. Originally produced for the Army Air Forces, it has, or soon will, become available for commercial use. The Packet has a level floor at truck-bed height, a straight-walled interior, and a cargo capacity of 2,916 cubic feet.

called a "shuttle bombing" mission. The planes which were dispatched from England, after bombing their German target, landed in North Africa; the process was then repeated in reverse. The crews, returning to England, had accumulated an extensive collection of North African souvenirs, the most remarkable of which was a small donkey. The entry of this unwanted alien into Great Britain from an area in which glanders, anthrax, and other animal diseases were prevalent served to emphasize the fact that international air traffic of pets and mascots was a def-

Presented before the section on sanitary science and food hygiene, eighty-third annual meeting, American Veterinary Medical Association, Boston, Aug. 18-22, 1946.

Chief, National Bureau of Veterinary Affairs, United States Military Government in Korea.

inite threat to that country's animal health program. One hundred and eighty-eight dogs, 3 cats, 1 coyote, and 1 donkey are known to have been landed in Great Britain by aircraft during the war.[2] It is noteworthy that over 96 per cent of these



—Photo by Dan Frankforter

Rear view of aircraft and loading arrangement during trial of the plane as a "flying van" for race horses.

animals were placed in quarantine or otherwise properly disposed of. The fact that such a large proportion of those air-borne animals were rounded up under extremely difficult wartime conditions is indeed a tribute to the untiring efforts and zeal of British animal-disease control officials. The fact that Great Britain has remained free of rabies emphasizes the effectiveness of this accomplishment.

The first mass shipment of livestock by air is believed to have occurred in the spring of 1944 when several hundred horses and mules were flown from India to Burma for use in the British Wingate expedition.[3] Both the United States Army Air Forces and the British Royal Air Force participated in the movement, using gliders as well as planes. This was followed in 1945 by three air shipments of Chinese Army horses and mules.[3, 4, 5] In the first of these shipments, 2,682 animals were air-lifted from Burma to China over the "hump" at altitudes as high as 20,000 feet. The two later shipments both occurred in China. A total of over 7,000 animal trips were accomplished with the loss of but 1 animal, which had to be destroyed after developing an uncontrollable excitability while in mid-air.[3]

The commercial shipment of livestock and pets is largely a postwar development. The relatively high air freight rate has been the greatest factor in limiting this service. The aircraft most used for air cargo transport, the DC-3 and the DC-4, were designed primarily for passenger service and are not entirely suited to cargo use. Almost any airplane can be operated at a profit in many foreign countries where problems of terrain give air transport, with its ability to surmount all natural bar-

—TWA Airline Photo

Baby chicks, because of their highly perishable nature, have been air-shipped by the hundreds of thousands. Both domestic and international shipments arrive at their destination in excellent condition, often with no death loss.

riers, a decided economic advantage. Under such circumstances, air cargo commands a much higher rate than the market would bear in the United States with its highly developed surface transport facilities. This situation will be corrected as new aircraft designs make their appearance. The first plane designed solely for air cargo will soon be used commercially. This and subsequent models are expected to operate at costs which will allow substantial reductions in air-cargo rates. As those rates are further reduced, airborne livestock shipments will become commonplace. The accompanying chart shows cargo capacity and range of representative airplane types now used for cargo carrying or scheduled to be so used in the near future.

Even at present rates, air transport has proved to be the most efficient and econom-

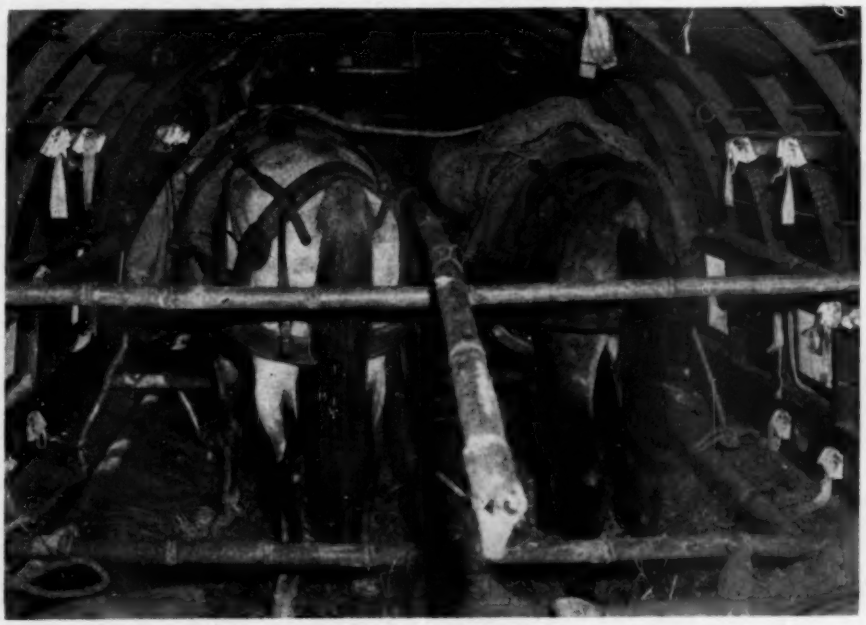
ical method of making international shipments of valuable, young, dairy cattle and swine, animals for zoölogical parks, fur-bearing animals, and baby chicks. Airlines have recently offered international pet-shipping service on regularly scheduled flights, and within this country dog fanciers transport their entries from one show to another in specially chartered planes. The air-cargo industry is giving a great deal of attention to shipping exhibition livestock by air, and plans have been completed to provide "flying van" service for race horses.

The most common agent in the spread of animal diseases is, of course, the infected animal itself. Since the establishment of the U. S. Bureau of Animal Industry, the international livestock quarantine and inspection service has been an effectual barrier to the entrance of various contagious diseases from other parts of the world. This service was, however, organized to cope with maritime traffic, whereas aëronautical transport presents an entirely different situation. The geographic position of this country no longer affords the same large measure of protection from the introduction of animal diseases. The carrying of animals by aircraft has the same connotation as their being carried by surface craft. If the fact that a smaller load is carried decreases the possibility of the importation of a disease-carrying animal, the speed of travel increases that hazard. Whereas, ship travel to our own country has been a matter of days or weeks with the result that the incubation period for many of the communicable animal diseases has passed, it is possible by means of air travel to reach practically any point on the earth from any given point within two days flying time. Thus, animals from enzoötic areas throughout the world may bring such infection to any United States community before characteristic symptoms appear or can be recognized.

ANIMAL PRODUCTS

Occasional air shipment of meats, meat products, hides, skins, wool, and other items of animal origin into the United States is to be expected. The possibility of such products disseminating animal diseases is well known, and their importation by aircraft warrants the same close regulatory supervision that has been practiced at coastal and border ports.

Garbage disposal in connection with international air traffic is a problem deserv-

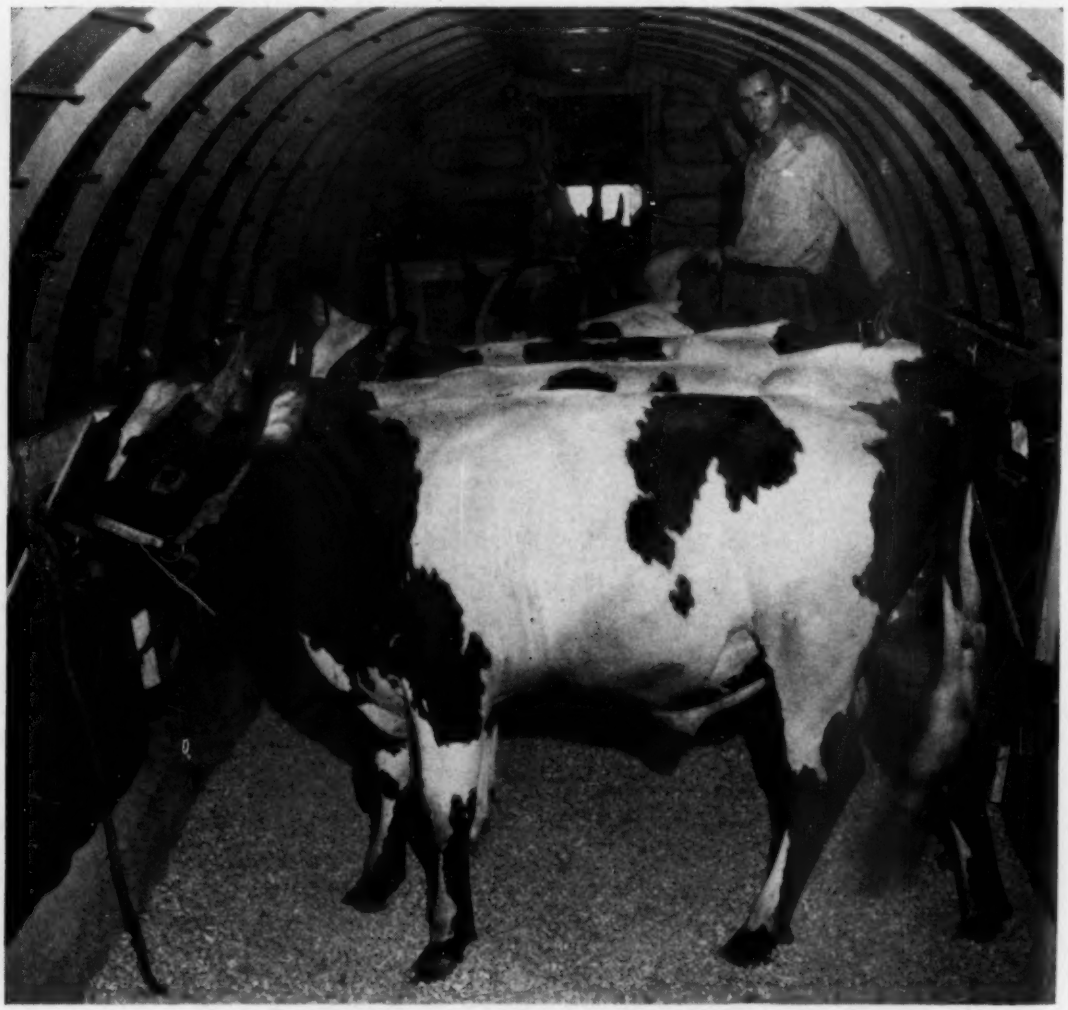


—Headquarters, Tenth Air Forces Photo

Loading arrangement of military animals air-lifted from Burma to China. Four or 5 animals, tied in bamboo stalls, were carried in each of the C-47 transports.

ing special consideration. Veterinary interest in this problem is founded on the possibility that the garbage may contain uncooked meats or other animal tissue, and thereby assumes a rôle in the transmission of livestock diseases. Several diseases are conveyed by garbage, among which are hog cholera, swine erysipelas, foot-and-mouth disease, tuberculosis, trichinosis, vesicular stomatitis, and vesicular exanthema.[6] The American method of in-flight feeding has been to prepare meals at air terminals for later serving aloft, a procedure which eliminated uncooked meat products in the garbage from aircraft. This is not necessarily true, however, of foreign airlines operating into this country, some of which prepare meals in transit from foodstuffs procured at foreign markets. Nor will it long hold true upon American-owned airlines engaged in transoceanic passenger service, since new and larger passenger aircraft will include completely appointed kitchens. A well-advised step toward the solution of this problem is contained in a bill* recently introduced and now pending Congressional action. The purpose of that bill is to provide a means of

*H. R. 7101, Seventy-ninth Congress, second session.



—*Ayrshire Breeders' Association*

Six of 10 Ayrshires at LaGuardia Field, New York, ready to take off for Colombia. The first breeding cattle to be shipped to that country by air, they travelled at the rate of 60 cents per pound, or a total cost of $3,408.

controlling the handling of garbage from vessels, railway cars, aircraft, and other vehicles, so as to reduce to a minimum the risk of diseases from such refuse.

STOWAWAY INSECTS AND RODENTS

Another aëro-sanitary problem of veterinary importance is that of transportation of insect stowaways, among which may be vectors of animals diseases. That insects might be carried by aircraft to areas in which they did not occur naturally, was first appreciated by Griffitts[7] in 1931. Since that time many investigations and surveys have been conducted, much of the work having been done by the U. S. Public Health Service. Most investigations have consisted of identification of insects recovered from planes after foreign flight, and discussion of their potential importance in human disease. This has focused attention on mosquitoes, flies, and occasionally, fleas and lice, while many other common insect species have often not been enumerated. The particular emphasis upon mosquitoes has suggested that they alone were the entomologic problem in air traffic and has resulted in control measures directed largely upon them. Complete recovery and identification, however, shows the fallacy of this conclusion and points to the fact that of insects and other pests borne by planes, those of importance in human

—Photo by Albert A. Freeman

A planeload of 10 Guernsey heifers were shipped from New Jersey to Bogota, Colombia, on June 10, 1946. The 24-hour flight cut by approximately fifty days the time involved in previous surface shipments of cattle to South America. The loading process is shown, with a view (inset) of arrangement of the cattle within the plane, a DC-3.

disease comprise a minor percentage of the total. Some studies have been conducted with regard to the agricultural aspects of this problem. But, much additional investigation will be required to evaluate completely the economic (as differentiated from the public health) importance of insect stowaways in aircraft.

Magath and Knies[8] have pointed out that relatively small numbers of insects are transported by aircraft and, further, that the time involved and flight conditions obviate breeding en route. This dilution factor, plus the possible lethal or devitalizing

The mass of mosquitoes shown here were swept up from the two side blisters of a B-29 aircraft which had been standing in the open at Pinecastle Army Air Field, Fla., in August, 1945. The aircraft had been heavily treated with the DDT aerosol dispenser. These were probably much less than half the total number in the airplane.

effects of flight, and the chance that the point of release may be unsuited environmentally, are factors which those authors feel warrant the conclusion that the actual chances of implantation of insect stowaways by aircraft are of a much smaller order than has frequently been supposed. It is, however, essential that there be no minimizing of the possibility of importation of insect-disease vectors. So little is known about the ecologic requirements of any insect vector that speculation about its chances of survival is dangerous. One example, emphasizing the veterinary significance of the possible transmission and implantation of an exotic harmful insect, is the fact that one of the common mosquitoes taken in airplane quarantine inspection work at San Juan, Puerto Rico, and Miami, Florida, is *Aedes taeniorhynchus*, which has been suspected of being a vector of the virus of the Venezuelan strain of human and equine encephalitis.[9]

Evidence that insects do regularly enter aircraft in numbers is presented in a survey conducted at Pinecastle Army Air Field, Florida, during which approximately 7,500 mosquitoes were collected from one B-29 airplane after a single, massive, aërosol treatment.[10] These insects were taken from

Modern Cargo Aircraft—Operating Data

Aircraft Model	Cargo (Payload)	Range
Douglas C-47 (DC-3)	6,000 lb.	over 1,800 mi.
Douglas C-54 (C-54)	10,000 lb.	3,000 mi.
Fairchild C-82 ("Packet")	15,000 lb.	3,500 mi.
Boeing C-97 (Stratocruiser)	35,000 lb.	1,000/4,000 mi. (depends on load)
Consolidated Vultee XC-99 (Convair 37)	50,000 lb.	4,200 mi.

These are relative statistics. The figure shown for cargo assumes a haul of maximum range. Variations are possible, for example: the C-54 is listed with a capacity for carrying 10,000 lb. for 3,000 mi., yet the same airplane will carry 15,000 lb. for a distance of 1,000 mi.

the two side blisters of the gunnery control compartment, and it was estimated that at least as many more were in the other parts of the aircraft.

Although it is difficult, if not impossible, to prove that any insect species has become established in a new habitat as a result of transplantation by aircraft, strong circumstantial evidence leads to the belief that such has been the case. During the period which elapsed between the summer of 1944 and early 1946, 15 insect species new to the Hawaiian Islands were found there, the majority of them firmly established.[11] The new insects included 1 grasshopper, 1 cricket, 1 mayfly, 6 moths, 1 beetle, 2 wasps, and 3 flies. It is doubtful whether any of these are of importance in veterinary entomology *per se;* yet it would seem well worth while to examine the facts surrounding their immigration. Adults of 1 of the moth species* were found more than once in planes arriving in Honolulu from other parts of the Pacific months before the insect was found to be established in the

*Achaea janata (Linnaeus).

Hawaiian Islands. The grasshopper† species was first found at Hickam Field, Oahu, a very busy air terminal where both adults and nymphs were said to be fairly numerous. For several months following its first capture, this insect was found only in that same immediate vicinity. It was described as from Texas.

Air traffic into Hawaiian airports increased greatly during the war, and during the peak months of 1945 estimates place the number of planes arriving each month from outside that territory as approximately 1,500. This increased air traffic, coupled with the first discovery of some of the new insects on or near airdromes, constitutes strong evidence that aircraft may have been the mode of transplantation.

The present method for disinsectization consists of spraying the aircraft immediately prior to take-off on international flight from dangerous areas. The aërosol bomb, consisting usually of pyrethrum in a freon vehicle and often including DDT, has been adopted. Until recently, the program for disinsectization of aircraft was directed largely against vectors of human diseases, and especially mosquitoes. In the United States, agricultural pests appear to be of equal, if not greater, importance and, certainly, effective control measures against these hardier pest forms would automatically take care of the usual, disease vectors. It would, therefore, seem advisable that authority for administration of all insect control measures in aërial traffic be vested in the United States Department of Agriculture. This system is now being followed in Hawaii, where the disinsectization of aircraft is performed under the supervision of U. S. Bureau of Entomology and Plant Quarantine personnel.

Stowaway rodents have been suggested as a sanitary problem in air travel, considering both the animals themselves and the vermin which they may harbor. Rats have been carried on planes. Several such occurrences have been authenticated. At Kelly field, Texas, two instances were observed of rats in planes from Central America. In Honolulu during the fiscal year 1942-1943, where six fumigations of planes were done by the U. S. Public Health Service, 8 rats were reported to have been recovered. The magnitude of the problem at this time is unimpressive, and it would seem probable that no plane will ever harbor as many rats as have been deemed reasonably safe on surface vessels. But, considering the fact that freight-bearing aircraft will, in the future, arrive in far greater number than surface vessels, and that their arrival points will be much more widely dispersed, it is anticipated that the air-borne, stowaway, rodent problem may soon require special attention.

†*Paraidemona mimica* (Scudder).

SANITARY CONTROL OF AIR TRAFFIC

The problems presented herewith are primarily matters of quarantine. Animal quarantines are ordinarily responsibilities of the U. S. Public Health Service, the U. S. Bureau of Animal Industry, and the U. S. Fish and Wildlife Service of the Department of the Interior. Of these agencies, the Bureau of Animal Industry is concerned with preventing the introduction of communicable diseases of livestock. Importation orders and regulations of that bureau are directed primarily at surface transportation, but future amendments or new orders will undoubtedly take cognizance of air transportation. Control of importation of certain small animals is regulated by the U. S. Public Health Service and based upon the possibility of such animals being vectors of diseases transmissible to man. The regulation‡, which became effective July 1, 1946, requires that pet dogs, cats, and monkeys shall not be imported into the United States unless they have been vaccinated for rabies and have been found free from demonstrable diseases upon physical inspection. It is based upon such possibilities as hydatid disease in dogs, yellow fever in monkeys, and rabies in all three species; it also sets forth measures for controlling importations of psittacine birds. The provisions of this regulation are fully applicable to air-borne imports. Both the U. S. Bureau of Animal Industry and the U. S. Public Health Service are concerned with the problems involved in possible importation of stowaway insect-disease vectors, and rodents, and in garbage disposal. The U. S. Fish and Wildlife Service is responsible for controlling importations of wild birds and animals.

In the continental United States, as of Aug. 1, 1946, there were 47 airports of entry, 16 airports at which landing rights were granted for regularly scheduled inter-

‡"Foreign Quarantine Reg." revised edition. U. S. Public Health Service, (July 1, 1946): paragraphs 11.154-11.155.

national flights, and an additional 19 air terminals at which emergency landing rights had been granted. This total of 82 airports at which internationally operated aircraft may land is an indication of the magnitude of the task of extending animal quarantine service to cover air-borne imports.

In addition to its international veterinary aspects, air transport presents domestic problems affecting state livestock sanitary regulations. Since animals may be hauled by air over several state borders, to be landed many miles from the point of origin, it would seem appropriate to recommend the institution of measures to assist state and federal officials in policing the sanitary laws that are in force. Such measures should include provisions requiring that air-borne animals shipped interstate be accompanied by a bill of lading to establish origin, destination, and ownership, and by a health certificate showing compliance with the regulations of the federal government and those of the state of destination.

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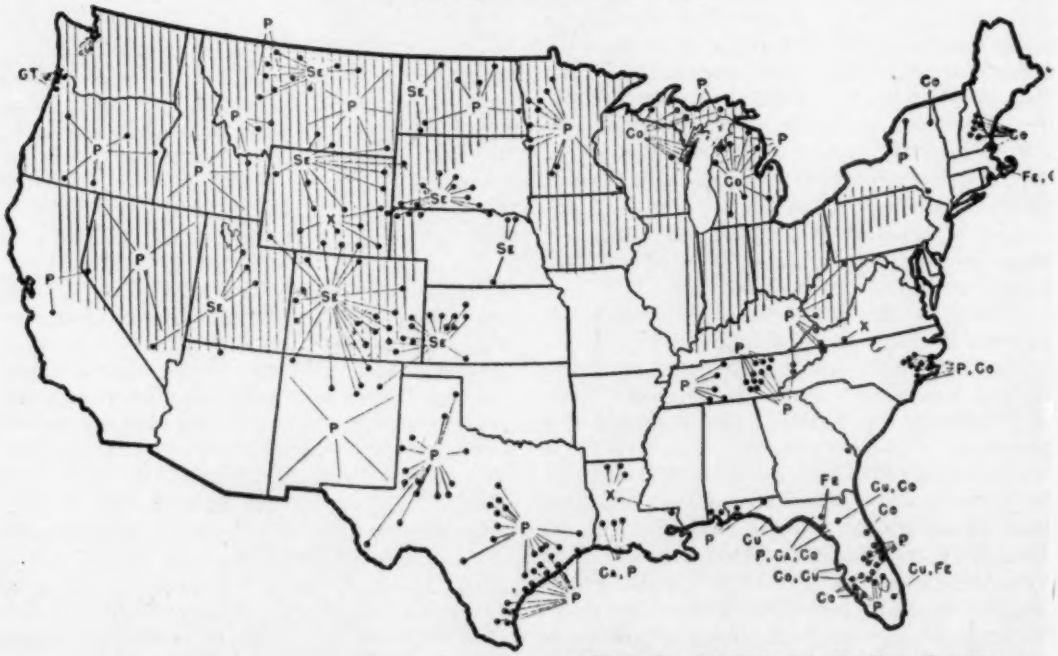
Mineral-Deficient Areas of the United States Affecting Animal Health



—U. S. Department of Agriculture Drawing

Se indicates toxic excess of selenium, and GT signifies soils conducive to grass tetany. The other symbols indicate extreme deficiencies as follows: Ca, calcium; Cu, copper; Fe, iron; P, phosphorus.

Food and Agriculture Organization of the United Nations' Conference on Animal Health

London, Aug. 13-15, 1946

The Conference, as an *ad hoc* committee, was called by the Food and Agriculture Organization (F. A. O.) "to study international veterinary questions and report to the annual conference of the organization at Copenhagen in September." After consultations with the director general, F.A.O., invitations were sent to, and accepted by, the following:

France.—Mons. Frisson, Inspecteur Général, Services vétérinaires.

India.—Dr. F. C. Minett, director, Imperial Veterinary Research Institute, Muktesar-Kumaun.

Iran.—Dr. M. R. Rastegar, director of Veterinary Services (observer).

South Africa.—Dr. P. J. duToit, director of Veterinary Services.

United Kingdom.—Sir Daniel Cabot, chief veterinary officer, Ministry of Agriculture & Fisheries; Mr. T. Dalling, Imperial Bureau of Animal Health, director, Veterinary Laboratory, Ministry of Agriculture & Fisheries; Mr. John Smith, adviser on animal health, Colonial Office; Mr. R. Daubney also attended as an observer.

UNRRA.—Mr. Graham Edgar (senior veterinary research officer, Department of Agriculture, New South Wales), UNRRA South West Pacific Area International Veterinary and Livestock Secretariat; Mr. C. Hopkirk; Col. Aselmeyer and Mrs. Markley also attended as observers.

U. S. A.—Dr. H. W. Schoening, chief, Pathological Division, Bureau of Animal Industry, Agricultural Research Administration, U. S. Department of Agriculture.

Office International des Epizoöties.—Prof. G. Flückiger, president; Mons. E. Leclainche, director.

Brazil.—Dr. Sylvio Torres accepted an invitation but was unable to attend.

The following were unable to send representatives or to attend personally: U.S.S.R., China, Col. Max Henry, UNRRA SWPA Secretariat; Col. Todd, Allied Military Command.

The Conference was guided in its deliberations by the acute necessity to increase the food supplies of the world, particularly food products of animal origin, and the realization that veterinary science can contribute materially in alleviating the present state of affairs. The wastage from the principal epizoötic diseases throughout the world is known to be enormous, but the ravages of the widespread insidious diseases are probably no less serious. With regard to the latter, it has been estimated, for example, that the losses due to mastitis, brucellosis, and infertility of cattle alone in Great Britain amounted on a conservative basis, to £17,000,000 annually. Further, the Conference would direct attention to the effect of animal diseases on agricultural production in those extensive parts of the world where oxen, buffaloes, and other animals are used in agricultural operations.

The Conference emphasized the essential need for action on the widest international lines in order to eradicate the major plagues and to reduce the losses due to other diseases. It envisages collaborative action in research into veterinary problems, and coöperative trials and use of new products for the control of disease in order to obtain an early assessment of their value in different countries and under varying conditions. Similarly, in the administrative field, joint action between countries concerned in any particular campaign was deemed indispensable.

In this connection, the Committee considered some of the principal epizoötic diseases and reviewed in some detail the subject of rinderpest. It came to the conclusion that rinderpest still represents a major menace to the world's supply of food and felt that every effort should be made to eradicate the disease completely where it exists in enzoötic form. The Conference noted with the liveliest interest the coöperative research into this disease carried out by the United States and Canadian scientists which resulted in the preparation of vaccine of a new type which is now being tested in the field in Africa and China.

The successful control of rinderpest in Tanganyika since 1938 was due to the wholehearted collaboration of all the southern states of Africa, and it was noted that similar action has been arranged between the British and French colonial authorities in West Africa.

There are, however, other diseases responsible for very heavy losses of livestock, and the coöperative effort in the laboratory and in the field applied to rinderpest could usefully be extended to the study and control of some of the major causes of wastage in animals.

Relationship of F.A.O. to Existing Veterinary Organizations

a) Imperial Bureau of Animal Health and

Dr. H. W. Schoening, chief, Pathological Division, Bureau of Animal Industry, USDA, provided the official report, as published here, of the FAO United Nations' Conference on Animal Health held in London, August, 1946.

Related Bureaus.—The Conference noted with satisfaction that the Imperial Agricultural Bureaus have indicated their willingness to place at the disposal of F.A.O. their abstracting services and publications. In view of this position and the activities of abstracting services in other countries, it felt that no attempt need be made by F.A.O. to inaugurate an abstracting service for agricultural science, particularly in relation to animal health.

b) International Veterinary Congresses.—The Permanent Committee of the International Veterinary Congresses organizes meetings normally at intervals of four years, but after the first world war twelve years elapsed before a congress could be called together. The hope was expressed that through the instrumentality of F.A.O. the holding of the next congress may not be unduly delayed.

c) Office International des Epizoöties.—This Office was established in 1924 and now comprises 43 adhering countries. Its permanent committee, constituted of delegates of each adhering country, normally meets annually to discuss matters of scientific and administrative interest in the veterinary sphere. In addition, it publishes regularly a statistical review of the state of epizoötic diseases in different countries and a bulletin containing the proceedings of the annual meetings, special articles, reports, abstracts, and laws and regulations made by adhering countries on the subject of the control of diseases of animals and importation of livestock and livestock products.

The Conference was convinced of the importance of the work performed by this office and requests F.A.O. to extend its support to this Office so as to enable it to pursue and extend its activities in close coöperation with other existing international organizations in the field of veterinary science and public hygiene. It wished again to emphasize the need for international coöperation in scientific research and would suggest that this aspect be further examined by F.A.O.

d) South West Pacific Area Veterinary and Livestock Secretariat.—The Conference wished to direct the attention of F.A.O. to the establishment by UNRRA in December, 1945, at Sydney of this Secretariat, the primary object of which was to deal with conditions arising from the war in that area. The Conference recommended that F.A.O. examine the advisability or otherwise of continuing the Secretariat when once the primary functions have been fulfilled. While occasion may arise from time to time to consider the setting up of a regional secretariat for a specific purpose, the importance of maintaining a single international organization to deal with all matters affecting epizoötic diseases was stressed.

In view of the importance of veterinary science as an aid to F.A.O. in furthering its aims, and in order to enable F.A.O. to give effect to the views of this Conference, *it strongly recommended that a Standing Committee on Animal Health, consisting of veterinarians, be set up by F.A.O.* This standing committee would be available to advise F.A.O. on all technical matters affecting animal health and their application, and would also act as liaison between F.A.O. and the international veterinary organizations. At the same time, it is desirable that countries not yet adhering to the *Office international des Epizoöties* should be asked to join this organization.

The standing committee would also keep itself informed of the progress of work carried out on behalf of the World Health Organization on diseases of animals transmissible to men.

Finally, the Conference considered that the adequacy of the existing veterinary services in certain countries might be reviewed by the Standing Committee on Animal Health.

D. A. E. CABOT, *Chairman.*

London, 15th August, 1946.

At the Copenhagen Conference of F.A.O., the report of the *ad hoc* Veterinary Committee was referred to the Standing Committee on Agriculture, which approved the recommendations, but suggested that, in view of the close relationship between animal health and other livestock problems, the Standing Veterinary Committee might be part of the Standing Committee on Agriculture.

Directions for Bleeding Swine for Laboratory Tests

In the program sponsored by the University of Illinois for the control of swine brucellosis, the following techniques are recommended for bleeding:

A) Snub the animal to a post. Cleanse the under part of the tail, close to the body, with 50-70 per cent alcohol. Wipe area dry, then puncture one of the coccygeal arteries and collect blood immediately in a sterile tube. Cleanse and dry scalpel before bleeding another animal.

B) Bleeding from the anterior vena cava presents an improved professional technique. Lay young animals on their backs and insert an 18-gauge, 3-inch needle fitted to a glass syringe, directed over the edge of the thoracic inlet medially and posteriorly 2 to 2 1/2 inches to tap the anterior vena cava. For mature swine, use a 4- to 6-inch, 14- to 16-gauge needle and bleed the animals in a standing position. Rinse the bleeding needle in physiologic saline solution immediately after bleeding each animal. A bulb syringe is useful.

Fill the vials approximately two-thirds full and do not use an anticoagulant.

Historical Sketches and Memoirs

III. The General Practitioner

(Continued from December Journal)

L. A. MERILLAT

Chicago, Illinois

14.

I would regret to see organized veterinary medicine in this country go on without starting a *bona fide* movement exclusively designed to fill that outstanding need—backing the practitioners on the basis of laws and regulations which all concerned will honor and respect. To have postponed the effort was a major failing that is no longer pardonable. An outline has already been suggested and the reasons are better understood. When in earlier days, practice, education, and organization were but half developed, everything was too haphazard to iron out with the means at hand. But since entrance and graduate levels have been brought up to the country's needs, turning classes of fine, young doctors into a world of ingeniously conceived quackery seems like mockery. The situation is grievous not only from the disease-control outlook but also for the extent to which it compromises the members of a learned profession.

A Major Failing

Our chronic social ailments are no longer incurable. Machinery has been installed to cure them: state associations, state examining boards, state livestock sanitary boards, and state veterinarians, federally hooked up, are potent agencies if put to work. These elements were not in the old-timer's formula. They had to be made.

15.

The question of how many veterinarians the country needs cannot be answered until all present and future branches of the service have been filled to overflowing which is a long, long way off from 1947. The veterinary profession is just starting out on its journey. The personnel it will have to recruit as it marches on is no more predictable than the route it will take or the destiny at which it will arrive. Obviously, the uncertainty of these factors is responsible for the conflicting opinions about numerical strength. The 50 or so practitioners of the 1850's, arguing about "the over-crowded profession," gave birth to an everlasting debate. The fields that graduate veterinarians will cultivate and the size of the finished estate ought to be visualized before, or along with, estimating numbers. In any event, would it not be better to *over-crowd* and set veterinarians to hunting for new tasks than to *deplete* and let veterinary medicine continue to fall into nonprofessional hands? The choice is between a large and ambitious profession on the one hand and a small and impotent one on the other. Take your choice. The country is vast and its food industry has multiple ramifications. There seems to be danger of erring in the downward direction to the detriment of the veterinary profession, with the general practitioner the chief victim. As a field for the marauder, veterinary medicine is a natural; it is notably convenient and vulnerable to invasion. It needs a vigilant guardianship that only a sufficient manpower can provide. When public veterinary education had a productive capacity from 0 to 10 graduates or so per year, outsiders took over in a large way, and history with variations has never ceased to repeat itself. Private enterprise (schools) came into the picture and created a personnel and a profession—a kind of pioneer infantry to pave the way for the coming forces. It would not be glorious for the present generation to lose ground now, would it?

Numerical Strength

16.

There are many districts in the very heart of this country where the mountebanks are reaping rich harvests with perverted science in the absence of professional men. The farmers, like those of the no-veterinary school period which I well remember, are being coached to get along without a veterinarian's service. Action is needed in the backing of part-time veterinary service.

Part-time Work

When a general practitioner refuses to coöperate cheerfully in official work, even at

great financial sacrifice, he is playing into the hands of the enemy whether the job is state, federal, or municipal. The refusal is a display of either thoughtless or intentional contempt for both good citizenship and a higher rating for self, family, and profession. The fault of holding oneself aloof from public service when invited to participate in animal production or control of disease is apt to be construed as a lack of public spirit—which it is. In the pursuit of professional life, public service spells honor and that is not measured in dollars *per diem*. If the pay check is not to your liking perhaps you haven't helped correct that detail.

One of the funniest things I know is the far-flung belief that the country owes one a living and that nothing is required in return. In our field, which is basically an every day public service, there is no place for phoney patriotism in a service delegated to protect health and property. Practicing veterinary medicine for all the traffic will bear, unaware of the debt owed to government, from town up to federal, is not a very high order of gratitude.

The coming of part-time veterinary service, already partly installed in some states, seems inevitable if a complete service is to be furnished to the livestock industry. The beneficiaries are the general practitioners. One must look to them for this expansion. While there are districts that cannot support a veterinarian through private fees, there are examples where substantial and dependable incomes have been built up in the less flourishing livestock regions by making connections with federal, state, and municipal agencies. These sidelines plus practice convey the general idea. In the face of the present situation, the part-time question may well be taken up for systematic study and action by the associations, the general practitioner leading the movement.

17.

Humane Practice

On sundry occasions, it has fallen to my lot to address humane workers or my colleagues on the humane side of practice. I have seized these opportunities to stress the vast amount of cruelty to animals prevented by veterinarians in their every day work, *i. e.*, the prevention and treatment of suffering in uncounted millions.* On these occasions I have sometimes been reminded, quite politely, that some veterinarians are careless in respect to preventing pain in their surgical work. One has to admit that ingenious restraint in lieu of anesthesia was once the reigning custom despite the excellence and safety of anesthetics since the 1850's. Reckless disregard for inflicted pain is now approaching the vanishing point, but it has taken a century to achieve that end. Convenience rather than compassion still rules to a too great degree. The agony of castrations, amputations, extirpations, and intra-abdominal work by the self-made veterinary surgeons of earlier days has been preventable since the 1850's. Certainly since the 1890's, when cocaine and synthetic substitutes came into use, the only conceivable excuse for not resorting to painless surgical work more generally was *indifference to the pain inflicted*. Grave as the indictment is, reform is far from general.

After having watched the self-trained surgeons castrate ridglings, tie off hernias, and extirpate growths without batting an eye toward the struggling beast, I was pleasantly amazed on joining the McKillip staff in the 1880's to find that all horses and dogs surgically treated under recumbent restraint were anesthetized — horses with chloroform and dogs with sulfuric ether. There was no exception. As in human surgery, general anesthesia was regarded as a normal part of a surgical operation. Operating on a horse not chloroformed was unthinkable at the McKillip clinic from the very start in 1878 and was never violated during my thirteen years at that clinic. This practice deserves a place in American veterinary history because it was not the pattern of that day, nor since. Regrettably, when the younger set took over at the turn of the century, the custom of twenty-two years was not universally practiced. The obvious reason for the change was that the veterinary profession was not impressed with the noble idea of anesthetizing surgical subjects as if they were human beings. It became more habitual to flout the chloroforming of horses as unnecessary and hazardous. (In all those years (22) there were no anesthetic deaths). The demonstrations of

*It would be unfair to humane societies to infer that they were not aware of the humane side of veterinary practice. The SPCA of New York took the initiative in having a veterinary practice act passed in 1877 (*Am. Vet. Rev.*, (May, 1878): 75). The bill provided for a board of examiners and authorities to issue licenses. Strange as it may now seem, a committee of physicians and veterinarians, protested against its passage. Figure that one!

Jennings and Bowler and Dadd in the 1850's and of McKillip 'til the end of the century did not "take." On the contrary, general anesthesia became an unpopular step in animal surgery until nonvolatile anesthetics were introduced in small animal surgery and chloral, intravenously, was employed to a limited extent in large animals.

One must know how to give chloroform to animals. We preferred ether in dogs for no other reason than that it was reported to be "tricky," yet a medical student of Northwestern University (1908) chloroformed hundreds of dogs in an experimental laboratory adjacent to our hospital without having an anesthetic death. These groups of dogs were anesthetized for a series of researches involving intra-abdominal invasions. Coupled with our own experiences in horses, the unpopularity of chloroform seems to be unjustified. The death rate is lower than that of chloral in horses and barbiturates in dogs. Figures from which percentages of casualties can be computed are not available. Practitioners have never developed machinery for gathering such statistics. Few are inclined to report their operating room catastrophes.

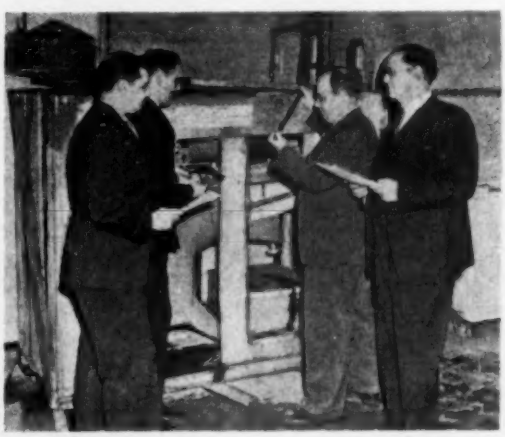
Shortly after joining the McKillip staff, I was made the anesthetist, meaning mostly the chloroformer of horses. Calculations on the basis of 3 horses per day for twelve years brings the number of anesthesias to 10,800. This is exclusive of those anesthetized in my own practice, and, in later years, at the Chicago Veterinary College clinic from 1901 to 1917 and at association clinics up to 1935, which add quite a number to the above figure, a conservative estimate. During the whole period, there was one anesthetic death due to a sudden unaccountable syncope in a ridgling stallion. These details appear necessary to establish the safety of chloroform for annulling surgical pain. It might be mentioned also that the first horse* (to my knowledge) to be chloroformed in public in America was a roarer operated upon at the AVMA clinic at Omaha in 1898. Chloroforming that horse in a casual fashion was an innovation that aroused greater interest than the operation itself. I there learned for the first time that it was not customary to anesthetize horses for surgical operations, and was told so. In the years to follow, it was common to see surgeons (at clinics) pawing among viscera for half an hour or more in search of a hidden testicle with no one in the audience particularly astonished at the patient's excruciating suffering. To describe these unforgettable scenes would require new heights of unprintable words. To get a picture of the suffering a general practitioner can cause in a lifetime, one has but to think of the victims of the dehorning shears and saw, of poll evils, fistulous withers, quittors, and ridglings "nailed" to the ground or table without anesthesia. Infiltration anesthesia and nerve blocking have come to the relief of these suffering animals to a considerable extent, but often they remain unused because "the price of beef" does not permit, as a dehorner once insisted. Carving into living flesh without annulling pain is persecution of the helpless, unkind, brutal, immoral, and unscientific. If this is callous, pray tell the truth in tenderized words.

(Part IV, The General Practitioner, to be continued next month.)

*A horse was chloroformed at the Royal Veterinary College (London) in 1847. The few operations performed under chloroform in this country in the 1850's were not public demonstrations.

Continuous Butter Churn

One of the unique prizes of the invasion of Germany was a continuous butter churn that turns out 1,500 lb. of butter per hour. It was



—Journal of Milk Technology

German continuous butter churn.

captured at Stuttgart where it was turned over to the Quartermaster Corps. Trials as to its applicability to American dairying will be conducted by the Department of Dairy Husbandry, University of Illinois, at a Champaign creamery. The mechanism is closely guarded in order that all companies interested will have equal opportunity.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Bone Pinning in Fractures of Small Animals

E. A. EHMER, D.V.M.
Seattle, Washington

HANDLING OF FRACTURES in small animals includes everything from doing nothing to open reduction and bone pinning. After doing almost all of the various things during twenty-five years of practice it seems that there is merit in each and every method.

Some bones, such as the humerus, femur, and pelvis being embedded in strong muscles, tend to mend without any help and, in the majority of cases, will heal well enough if the patient is merely confined in a small pen for a few weeks. Let us call this method the absent treatment.

There are many veterinarians who employ the absent treatment, and within this group there are practitioners of good repute. There is no inference on my part that wrong is being done. As this paper progresses, an attempt will be made to point out some of the specific kinds of fractures that are met in practice, and comment will be made as to success and failure in the treatment of these by using the ordinary casting methods.

Until the veterinarian used an x-ray, he was well satisfied with his fracture work. This is true because he ordinarily wrapped up the broken limb and, after a varying length of time, the patient again walked and all seemed to be well.

Had this man peeked at the broken bone through a fluoroscope during the healing process, he would have been scared because, in almost all cases, the broken bone was not set. In fact, the ends overlapped and were usually angulated. However, healing usually takes place, and even if the leg is short and crooked, most cases gain the use of the bad member and it is considered a satisfactory recovery.

Presented at the twenty-seventh annual meeting of the Northwest Veterinary Medical Association in July, 1946, at Seattle, Wash.

A broken humerus, if bandaged around the body, will usually heal in some manner within a few weeks. If no bandage is applied, it will heal in about the same time. This is just the average fracture, for when one finds a fracture of the humerus in which the radial nerve is involved, or where the fragments are widely separated by muscle, these will not do very well unless pinned or reduced by open reduction. (These procedures will be considered later.)

A broken femur presents certain problems and, even though the majority will heal by the absent treatment, some of them are most stubborn even when the best technique is used.

Consider the hind leg of a dog. It is impossible to put on a cast which will immobilize it (when the leg is in normal extended position) if the fracture is above the middle. Any cast applied to such a case merely immobilizes the good part of the leg and increases movement at the fracture site. This cannot do any good, and actually does harm.

However, if the leg is flexed so that the tibia is about parallel with the spinal column, the broken fragments of the femur are usually brought in close apposition, and though the ends are overlapped, the fragments are brought near enough so that healing begins at once. If the leg is placed in a cast ("sling cast" described in *North American Veterinarian*, December, 1934) the end results are not too bad. Of course, in this procedure, there is no attempt to place the bones end to end; they are merely allowed to overlap and the result is a short, but serviceable, leg.

If the above is correct, and I believe it is, then it is almost impossible to set a broken femur and hold it in proper place by any sort of bandage and cast.

A lot of excellent work has been done

with Thomas splints and the "ice tong", which have been so wonderfully used by Dr. E. B. Dibell of Baltimore, and Dr. E. F. Schroeder of Boston. These men have pointed the way and have done marvellous work in handling difficult fractures of the femur. The work of Dr. Stader in bone pinning has made him world renowned. The equipment which he created is perfect in his hands. It is my desire to compliment him and encourage him to continue his excellent work.

Bone wiring, bone plating, and other open reduction handling of bones is common practice by the surgeon who works with human beings. There is no reason to question what these men do, because they really do it well, but in the field of the veterinarian it is vastly different. In the first place, the bones are so small that the application is difficult. Second, the matter of infection seems more serious in the dog than in man, and third, even if a plate is applied perfectly to a femur in a dog, there is no way to protect the bone plate against pulling out because the hind leg cannot be completely immobilized after the plate is applied. There are other methods of handling fractures, but they will be omitted at this time.

The tibia and radius and ulna are long, straight bones and, in the mind of the average practitioner, it appears relatively easy to wrap up these bones and get recoveries. Let us look closely and describe what happens in such cases.

The fracture is almost always oblique. Oblique fractures usually overlap and angulate. So, in treating such cases, if the bandage is applied tightly enough to *hold* the bones, it will be too tight for the soft tissues, and there will be pressure necrosis. If there is not too much pressure, the cast will either slip off the leg entirely or the bone fragments will move. In any case, there will not be a perfect union. Most of these cases require repeated casting, a long time for healing and, usually about the third week, it is necessary to break down the healing tissue, because a terriffic angulation has taken place. Sometimes this is possible and a straight leg ensues but, more often, the leg is crooked. Quite often, these bones appear to be quite strong when the final cast is removed and, with the very best intentions, the patient is discharged only to return two days later with a leg that looks like a rainbow.

It is granted that fractures of the tibia and forearm have been handled well by ordinary casting, but the above description is what one usually experiences. In view of the facts, one must look to better methods to obtain more nearly perfect results in these cases.

For a long time, we thought that the broken femur was most troublesome. Since I have been working with bone pins the past three years, I have changed my mind, and I now believe: first, if a femur is reasonably aligned, regardless of whether or not it is reduced in length (if it is lapped over but the sides touch), the job is very satisfactory in a nonworking dog; second, exact reduction as to length and alignment is much more important in the tibia and forearm than in the humerus and femur.

There are two conditions which, as far as we have been able to treat, are utterly dependent on bone pinning. These are symphysial fracture of the distal end of the femur, and fracture in the elbow point. By proper bone pinning, the former can be reduced and held in perfect apposition, and the latter offers more than all other methods put together, in our opinion. In both cases, the joint is spanned and immobilized during healing. However, the end results are very gratifying.

With respect to broken jaws, the bone pinning method is the next thing to perfection. Fractures of any part of the mandible can be handled easily by pins and clamps, and those of the symphysis of the mandible can be apposed and held by a single pin, placed from one mandible to the other. This can be cut off close and left in the bone.

The practice of placing steel pins directly into bones is not new. The history, though interesting, will be omitted. The beginning was in Europe and the idea was quickly adopted and improved by American surgeons. One of the leaders in the art of bone pinning is Dr. Roger Anderson, of Seattle, a man whose company has manufactured and sold numberless sets of equipment for use on war casualties.

About three years ago, it was our fortune to become interested in using the Anderson equipment on small animals. Numerous difficulties were encountered, so a great deal of work had to be done in the development of a pinning device which met the requirements of the small animal practitioner. After long months of work and worry, the Kirschner small animal equip-

ment has been developed, and it is my desire that it be offered to the profession to be used in the treatment of fractures.

The outstanding features of the Kirschner splint are as follows:

1) Pins are inserted into bones directly, without the use of a pin bar. This enables the operator to place his pins in any position he desires. Since this is true, when there is a short fragment of bone, the pins can be arranged to suit the case at hand, either close together, or far apart, or side by side, which is impossible if a pin bar is used, since the pin bar provides definite holes through which the pins are inserted.

2) The hand chuck which holds the pins is provided with a hollow handle. This enables the operator to place the pin well into this handle, leaving just enough of the pin exposed to penetrate the first cortex of the bone. The object is to shorten the pin while the boring process goes on and also to prevent slipping off the bone and possibly plunging through the entire leg and probably pinning the operator's finger. As the pin is drilled on through the second cortex, it is fed out of the hollow chuck, thus providing only enough length of pin to be safe at all times.

3) When the pins are in place, single clamps are slipped over the pins. These are provided to accept rods which connect the two pins. Then a double clamp is placed on the assembly of each bone fragment. Thus, each fragment is provided with its own unit, and when the units are manipulated into proper position, the fixation rod is placed between the two double clamps, and a permanent fixation splint is provided.

4) During the manipulation of the fragments, the operator can produce any sort of correction, including rotation, which is very difficult, if not impossible, where a pin bar is used.

5) If swelling occurs, and it usually does, the clamps can be loosened and adjusted to suit any case, which is not possible otherwise.

6) The reduction gear, which includes the turn buckle, is removed after the bones are fixed by the rod, thus removing most of the weight from the patient. There is a saving of cost in this also, since the operator need purchase only one such gear, which can be used on all patients and removed on completion of the reduction.

There are certain definite rules that should be followed in bone pinning. To begin with, the pins are placed at a converging angle so that, when the entire bone is penetrated, the pin points are slightly apart and about 1/4 in. through the bones. Each set of two pins is placed as near the ends of the bones as practicable. The reason for the latter is that muscle attachments are near the ends of bones, so in placing the pins there, one has greater advantage in manipulating the bone fragments.

The ideal arrangement is to have the pins inserted in such a position that the broken fragments can be manipulated over the anatomical axis.

Every broken bone, especially the femur, is pulled by the muscles so that the broken ends overlap. This overlapping may be a serious handicap, unless proper procedure is followed. In our work, we use an instrument called the Gordon Extender. This is merely a device, which pulls the broken member into normal length, or at least approximating that point. It is our opinion at present that some of these overlapping fragments might well be left in that position, provided that they are placed side to side.

The use of the Gordon Extender has other advantages from the standpoint of the operator. Strong pulling on the foot tends to pull the broken fragments into proper line and, if this happens, the pins penetrate the muscles in a more normal position. The better this is accomplished, the less distortion of muscles will follow. Also, if the bone fragments are held in a taut condition, they tend to hold still rather than roll away when the pins are inserted. In my work, I find it much easier to put in the pins, if there is a support beneath the leg, so that there is a definite counter-resistance.

Alignment of the pins is very important. There are two pins in each fragment and, in view of this, it is a great help if the two pins in one fragment are in line. If all four pins are in line when the fragments are in proper place, it is a triumph.

As a general rule, let it be said, the pins should be placed so that they do not distort muscles, so that they do not stretch the skin, and so that they are in proper alignment when the broken fragments are reduced and in normal position. Few operators attain all of these items, but it is important to approximate the point of perfection if possible.

There is one thing in which users of this equipment have a free hand, and that is the matter of proper rotation of the fragments. Before any attempt at reduction is considered, exact rotation is imperative. This is done by the mechanical ability of the

surgeon and by further manipulation of the lower fragment of bone, so that the broken leg assumes the same position as to rotation as the uninjured limb.

Before the actual operation of bone pinning takes place, there are certain aids which must be employed for the benefit of the operator.

First and foremost, there must be some sort of record of the location of bone fragment. Ordinary fractures can be examined *via* the fluoroscope. Unusual fractures need at least an x-ray picture of the lateral aspect of the member and, in any case worth a good fee, one should demand both a lateral and anterio-posterior view recorded on a film. So, in consideration of the best work, there should be two pictures taken of broken bones, one a lateral view and the other an anterio-posterior.

With the aid of these plates, the operator can see the position of bone fragments and visualize what he must do to replace the parts to a normal position. Veterinarians are prone to believe this procedure is not within their province, and they attempt to do good work without these aids. Experience will show these men that they are entirely in error because, in the first place, they cannot do their best without x-ray plates and, secondly, if they ask for them, they can get sufficient fees to compensate them for the additional costs.

Presuming the case in hand is a broken femur, the first consideration is proper extension of the limb. This is done as described above. The Gordon Extender is applied and tension is exerted until the member is reduced to normal length or until it is advisable to stop pulling. The process of pulling a leg back to normal length may take twenty to thirty minutes and, in some cases, it is well to give up before complete extension has been accomplished. The operator must use his judgment in this matter.

Surgical preparation of the leg to be operated on may be considered satisfactory if the following steps are employed:

1) Clip with surgical clippers the outside and inside of the member.

2) Wash with soap; rinse well.

3) Apply ether to inner and outer surface of leg.

4) Rinse well with alcohol.

5) Apply tincture of metaphen or other suitable tincture to entire leg, inside and outside, several times.

A specially made, double cover sheet has been devised for the purpose of properly draping the leg. This is so made that the drape is pulled up between the hind legs against the pelvis and, when in place, the upper part of the drape is pulled up and around the broken member. The object of this drape is to provide protection for the hand of the operator when he finds it necessary to palpate the inner surface of the thigh in order to determine how far the pins have penetrated the bones.

In view of the fact that in veterinary surgery some short cuts are taken, it must be emphasized at this time that there can be no dirty surgery practiced when bone pinning is under consideration.

This being true, the surgeon must provide himself with some sort of sterilizing equipment by which cloths can be sterilized and used dry. For this purpose, one can use an autoclave or an ordinary home pressure cooker. It is all right to boil rubber gloves and use them wet, but it is definitely not all right to boil and use cover sheets wet.

The actual insertion of the pins is difficult to describe in words. However, it can be said that the pins are forced into the bones with a back-and-forth, half turn of the wrist (no drill is used). When the proper pin site is located, the pin is plunged through the skin, the pin point is placed on the bone and, with slight pressure, the point is seated into the bone surface. Next, the operator considers proper angulation and alignment of the pin and, when satisfied, proceeds to insert the pin through the outer cortex of the bone. When the marrow cavity is reached, the pin passes on easily until the inner cortex is struck. At this point, it is necessary to loosen the grip on the pin and pull it out of the hand chuck just enough to pass clear through the bone. As the pin penetrates the entire bone, there is a decided let-up in resistance. Now the operator can feel the point of the pin as it protrudes on the inner side of the bone. Should the pin be too far through the bone, it is well to back it off so that about 1/4 in. protrudes.

Anyone interested in bone pinning should provide himself with pins and a hand chuck and practice on cadavers. This is the only way one can become acquainted with the feel of a pin entering a bone. Almost every bone has a different feel. Old animals have very hard bones as a rule, unless diseased,

while young ones are extremely soft. Dogs just recovered from distemper usually have very soft bones. Some diseased bones simply crumble when invaded with pins. This can prove most embarrassing when first encountered.

The matter of reducing a broken femur is often complicated by swelling or overlapping and, in many cases, there is a long, jagged point on one or both fragments. In the latter instance, unless the x-ray shows the exact nature of this point, the operator may find it utterly impossible to get a complete reduction. Where muscle contraction is extreme, it may be wise to place the fragments side by side without complete reduction as to length, since these cases heal readily and locomotion is resumed normally in record time.

Epiphyseal fractures of the distal end of the femur are readily handled by bone pins. Pins are placed in the proximal end of the femur and in the proximal end of the tibia, thus spanning the joint. When the distal fragment is 1/2 in. long or less, exact apposition can be provided and the results are spectacular.

Elbow fractures are handled in a like manner and, while the broken condyles of the humerus are more unruly, they respond very nicely to pinning.

Men unaccustomed to pinning bones fear soft tissues that may be pierced by the pins. In view of this attitude, it may be worth while to name the muscles involved in pinning various fractures. An outline follows:

Femur, Proximal End.—No. 1 pin penetrates biceps femoris (unimportant). No. 2 pin penetrates biceps femoris, vastus lateralis, and intermedius. (These muscles are large and heavy, and if pins are inserted into bones through these muscles while in improper position, it may be difficult to manipulate the fragments into proper position.)

Femur, Distal End.—No. 3 and no. 4 pins penetrate: *(A)* fibrous end of biceps femoris, and *(B)* vastus lateralis and intermedius (both heavy muscles).

Tibia.—No. 1 and no. 2 pins penetrate: *(A)* fibrous insertion of biceps femoris, *(B)* extensor digitalis longus, and *(C)* tibialis anterior. No. 3 and no. 4 pins penetrate the extensor digitalis lateralis.

Humerus.—Proximal end pins penetrate the deltoidius. Distal end pins penetrate the triceps femoris. (All unimportant.)

The important thing about this bone is the radial nerve. This passes from back to front, in a downward spiral trail across the lateral surface of the humerus. For the operator, it is well to remember that if pins are kept even with the lowest quarter of the humerus, the nerve will be missed.

Muscles of the radius and ulna may be omitted as they offer no complications in pinning. It might be well to review the location of the main nerves, which pass anteriorly very close to the elbow joint.

Clients generally ask how long it takes for a bone to heal. At first, this may puzzle a practitioner but until individual experience is gained, let it be said that each fracture may require a different time for healing.

Healing time depends on age, nutrition, previous sickness, and general condition, as well as how the bone is set. For example, a femur set end to end may take longer than one that is mis-set and placed side-to-side. We have seen femurs heal solidly in thirty days when well set. In young dogs, tibias heal solidly in three weeks, which is also true of the forearm.

The literature states that femurs require seven weeks in many cases, which is quite a long time. Regardless of what anyone says, there is a very satisfactory medium for this determination and that is the x-ray. If careful pictures are taken, bone callous can be seen, and when the callous is sufficiently prominent, then and only then is it safe to remove the splint and pins. Experience is perhaps the best teacher in determining the time of healing.

Following bone pinning, the matter of after care comes in for consideration. Pins are bound to cut the skin, so it is our practice to dust a sulfa drug into the cuts daily. If temperature rises above 102 F., we give penicillin every three hours. It is not uncommon for the temperature to rise to 103 F. within twenty-four hours after operation. As soon as the temperature recedes to 102, we stop the penicillin. This may seem contrary to accepted methods, but we find it quite satisfactory. Since adopting this procedure, we have not had a single abscess, nor any poliomyelitis.

To determine the proper time to remove the pin assembly, one may loosen the connection rod and, if union is not solid, the rod can be replaced. If union is solid, the rods and pins can be removed. In removal of the pins, it is not necessary to administer an anesthetic. Merely use a pair of pliers or, better still, the hand chuck, and the pins can be removed with ease. At

times, there is evidence of pain, but usually little or no attention is paid by the patient during this procedure.

After twenty-five years of small animal practice, during which I have been especially interested in the repair of fractures and luxations, it is my most seriously considered opinion that bone pinning must be accepted as a very essential part of the treatment of fractures encountered in the practice of veterinary medicine.

N-Propyl Methyl Ether

Krantz, Evans, Carr, and Kihler, University of Maryland School of Medicine, describe the anesthetic action of n-propyl methyl ether (*J. Pharmacol. and Exptl. Therap., 80,* (1946) : 138-144). This isomer of ethyl ether is a volatile liquid which, by inhalation, has anesthetic properties when administered to various animals (dogs and monkeys) that are 25 per cent more potent than ethyl ether. It causes no functional damage, no histopathologic change in the liver and kidneys, nor does it cause electro-cardiographic modifications at surgical depths of anesthesia. It has not been tried on man.

In the study of infertility in the female mammal, the over-all capacity to reproduce, independent of the essential organs of generation, has to be considered along with recognizable organic failure. The production of offspring, among given individuals, may vary where all detectable factors are equal.

Studied clinically and bacteriologically, sulfonamides used topically and systemically give good returns when used for both fresh wounds and preëxisting infections and in primary and secondary microbial invasions, regardless of the character, age, and extent of the traumatic damage; but despite their remarkable actions, the best of them are no match for surgery well done.

Ackman, Douglas, and Smith (*Ann. Surg. 123,* (Jan., 1946) : 70-95) found that while bacteriostatic agents prevent some contaminated wounds from becoming infected wounds, no agent tested influenced *Pseudomonas pyocyanea and Bacillus proteus vulgaris.*

The Growing Kit in Spring

Under this title, Dr. E. R. Bowness, director of the department of furbearing animals, Master Feeds, Toronto, tells of the problems which were encountered in raising mink kits and the manner in which each problem was solved. The scientific care of mink is discussed (*National Fur News,* February, 1946) under such headings as early care, weaning, nursing sickness, and feeds and feeding.

Physiopathology

Physiopathology, the science of function modified by disease, ought to be redefined when used to designate states of subnormal nutrition, since drawing a line of demarcation across the range of nutritional deficiencies so as to keep physiology on one side and pathology on the other, prior to the flare of clinical evidence or morphologic changes, would disqualify the word in the sense often used. Pathology, or the study of "any injurious deviation from the normal," in the sense ordinarily employed, falls short of indicating the antecedents of grave but invisible "deviation," and the same type of reasoning applies to physiology. The nutritional deficiencies as they loom in animal medicine seem to call for the coining of a new word through the combined consent of physiologist, pathologist, morphologist, and biochemist. Obviously, a field vast and practically unexplored is in the making.

What's the Calcium Content of Milk?

Seemons and McHenry, School of Hygiene, University of Toronto (*Canad. J. Pub. Health,* January, 1946), in a study of milk samples obtained from time to time during two months from 13 farms of southern Ontario, found the calcium content 20 per cent lower than that given in most of the tables on food components. The authors suspect that the standard figures may be erroneous. The investigation was carried out under the auspices of the Committee on Food Analyses of the Canadian Council on Nutrition. Methods are described and findings tabulated. No findings tabulated approached the usual 120 mg. per cent of the customary records.

CLINICAL DATA

Medication of Cecal Coccidiosis of Chicks

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WHEN Herrick and Holmes[1] indicated the value of sulfur in preventing infection with *Eimeria tenella*, a new impetus was given to hitherto ineffective attempts to medicate this destructive infection. Since that time, considerable information has been accumulated on the value of sulfur and sulfur derivatives by Herrick and his associates and by others; on various sulfonamide compounds, especially by Levine whose work led to the use of sulfaguanidine as a prophylactic; and on several other potential medicaments. Of particular interest has been the series of reports, stemming from the initial determination of Horton-Smith and Taylor[2] that sulfamethazine would interrupt established *E. tenella* infections, a capacity not demonstrable on the part of chemotherapeutic (prophylactic) agents previously considered. For a similar reason, the information supplied by Hardcastle and Foster[3] on the action of boron derivatives, particularly sodium borate, is important. The relatively low cost of the last group of compounds suggests that, in spite of their comparative toxicity, they might be of real importance in the control of coccidiosis. It was unfortunate that this work should have been terminated when these investigators had just obtained indications of the probable detoxifying action of urea for borax.

The present paper embodies results of attempts to analyze the action of sulfaguanidine, sulfamethazine, and borax-urea mixtures by breaking down the period of medication, together with a synopsis of trials of other potential chemotherapeutic agents.

EXPERIMENTAL PROCEDURE

White Plymouth Rock chicks were separated at random into groups of 25, weighed, and identified. Each group was placed in one chamber of a large battery. At from 3 1/2 to 4 weeks of age, each test group received a dose of oöcysts mixed with the ration, care being taken to remove any scattered infective material to prevent unintentional reinfection. Immediately before infection, the birds in all groups were weighed; all were weighed again eight days later. Where it seemed desirable, daily weight records were also kept.

Since facilities available did not provide for the maintenance of a control group in such a manner as to completely exclude the possibility of infection, the control in each experiment was held in the same battery with the test groups, all possible precautions being taken to avoid gross contamination. However, the control groups must be considered as groups not deliberately infected with coccidia and showing no clinical symptoms of coccidiosis, rather than as groups known to be free from any coccidial infection whatsoever.

When it was desired to hold birds after their recovery from the acute attack, these were removed to another battery which was cleaned daily to minimize the possibility of reinfection. No new infections were discovered among birds so held. With the exception of vuzin dihydrochloride, of which the daily dose was divided into halves and administered in capsules each morning and evening, all medicative agents were incorporated into, and fed with, the ration. Medication for prophylactic purposes was instituted at either seventy-two or twenty-four hours before the infective meal and continued for forty-five hours thereafter. In other words, it was planned that the medicative agents under test should be present in the system prior to the excystment of sporozoites, and should continue to be present until such of these as might survive would normally have penetrated the epithelium. As the results of Hardcastle and Foster[3] suggested that borax was effective only, or primarily, between the seventy-second and ninety-sixth hours after infection, *i.e.*, during or immediately following the release of the first generation of merozoites,

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certain groups of birds were medicated over a period adequate to insure presence of the potential chemotherapeutic agent during this release. In the first experiment, the period was from fifty-three to one hundred twenty hours after infection. In later trials, the time was changed to forty-five to ninety hours after infection. A third series of groups received medication only as bleeding commenced, *i.e.*, when only the interstitial, second schizogonous generation was present. Finally, some groups of birds were fed medicated rations from twenty-four hours before infection to one hundred twenty hours after infection. The results are summarized in tables 1 and 2 covering, respectively, the effective and the ineffective chemotherapeutic agents tested.

DISCUSSION

1) *The Effective Chemotherapeutic Agents.*—Considering first those agents studied which have some value in the control of cecal coccidiosis (table 1), we find marked differences in their effectiveness during different phases of the infection. This suggests the probability that not only is the mechanism of their action different, but that the stages of Eimeria attacked by the various agents also differ. Summing the results, the following indications of action appear to be present:

Sulfaguanidine.—The present trials fully confirm previous reports (Levine,[4] Farr and Allen[5]) of the value of sulfaguanidine when present prior to the excystment of the sporozoites. As has been indicated (Levine[6]), this drug appears to have little effect against the later stages of the infection. The unexpected result obtained in 1.6* certainly suggests the possibility that fairly high concentrations of sulfaguanidine may not be wholly inert toward the

*In referring to particular test groups of birds, these will be identified by experiment and lot number, as, 1.6 equals experiment 1, lot 6.

TABLE 1 — Synopsis of Experiments on Certain Medicaments Showing Promise as Prophylactic or Curative Agents in Cecal Coccidiosis

Exp.	Lot	No. chicks	Age weeks	Infective dose—oöcysts X 1,000	Treatment	Mortality	Chi-Square*	Wt. change 1-8 days after infection (Gm.)
1	1	25	3.5	90	None	17		+66
1	2	25	3.5	90	1% sulfaguanidine in ration from 72 hours before infection to 45 hours after infection	3	16.4	+61
1	3	25	3.5	90	1% borax—1% urea as above	5	11.5	+37
1	6	25	3.5	90	2% sulfaguanidine in ration from 53-120 hours after infection	0	26.4	+39
1	7	25	3.5	90	1% borax—1% urea as above	0	26.4	+61
1	10	25	3.5	0	None	0		+111
2	1	25	4	150	None	14		+37
2	2	25	4	150	2% sulfaguanidine from 24 hours before infection to 45 hours after infection	1	16.0	**+66**
2	3	25	4	150	1% sulfamethazine as above	19	2.2	+24
2	5	25	4	150	2% sulfaguanidine from 45-90 hours after infection	18	1.4	+50
2	6	25	4	150	1% sulfaguanidine as above	17	0.8	+21
2	7	25	4	150	1% sulfamethazine as above	0	19.4	+43
2	10	25	4	150	1% sulfamethazine 95-120 hours after infection	0	19.4	+59
2	11	25	4	0	None	0		+77
3	1	25	4	80	None	22		+23
3	2	25	4	80	.5% borax—.5% urea from 24 hours before infection to 120 hours after	3	28.8	+23
3	3	25	4	80	.25% borax—.25% urea as above	2	32.0	+57
3	7	25	4	80	.5% borax—.5% urea 70-90 hours after infection	15	5.2	+3
3	8	25	4	80	.5% sulfamethazine 90-120 hours after infection	15	5.2	+28
3	9	25	4	80	2% sulfaguanidine as above	19	1.2	+10
3	10	25	4	80	1% sulfaguanidine as above	19	1.2	+41
3	11	25	4	0	None	0		+116

*Mortality of group under consideration *vs.* mortality of untreated infected group of the same experiment.

later phases of infection. It is of interest to note that pooled fecal samples from the birds of this group showed discharge of only about one tenth as many oöcysts as did those from the unmedicated birds of 1.1 or those of 1.2 which received sulfaguanidine as a prophylactic. If an action against the later stages of infection does occur, it may be postulated that it is almost certainly attenuative or coccidiostatic, since the complete failure of sulfaguanidine to modify the course of infection in 2.5, 2.6 and 3.9, 3.10 is not consonant with coccidioidal power against any of the later stages of infection.

Sulfamethazine.—It is evident that the action of sulfamethazine differs radically from that of sulfaguanidine. When the latter is most effective, during the release of sporozoites, the former appears completely inert (2.3). On the other hand, sulfamethazine is evidently effective in checking the infection even after the appearance of hemorrhage (2.10, 3.8). Hawkins'[7] determination that sulfamethazine must reach a certain minimum concentration in the blood to become effective indicates that an interstitial stage is attacked. While the present tests do not eliminate the possibillty of effective action against other stages, histologic observations suggest that only the second schizogonous generation is susceptible as has also been indicated by Horton-Smith and Taylor.[8]

Borax-Urea Mixtures.—The anticoccidial action of borax-urea mixtures appears to differ in two respects from that of borax alone: the effective dosage may be much less, *i.e.*, 0.25 to 0.5 per cent borax as against 2 per cent borax; and the period of action is not limited to the release of the first generation of merozoites. As shown (1.3), borax-urea can produce a highly significant reduction of mortality when administered purely as a prophylactic. A peculiar result was obtained when borax-urea were fed continuously through the fifth day of infection (3.2, 3.3). In these groups, no blood was passed prior to the termination of medication and, of the five deaths occurring, three took place on the ninth and tenth days after infection, the

TABLE 2 — Synopsis of Experiments on Certain Medicaments Showing no Promise as Prophylactic or Curative Agents in Cecal Coccidiosis

Exp.	Lot	No. chicks	Age weeks	Infective dose— oöcysts X 1,000	Treatment	Mortality	Wt. change of survivors 1-8 days after infection (Gm.)
1	1	25	3.5	90	None	17	+66
1	4	25	3.5	90	1% silver asboloxane gamma* in ration from 72 hours before infection to 45 hours after infection	12	+54
1	5	25	3.5	90	1% sulfathalidine as above	21	+55
1	8	25	3.5	90	1% silver asboloxane gamma 53-120 hours after infection	24	+40
1	9	25	3.5	90	1% sulfathalidine as above	15	+48
1	10	25	3.5	0	None	0	+111
2	1	25	4	150	None	14	+37
2	4	25	4	150	5% silver asboloxane beta† from 24 hours before infection to 120 hours after infection	4‡	—48
2	8	25	4	150	5% silver asboloxane beta from 45-90 hours after infection	17	—2
2	9	25	4	150	Vuzin.2HC1,§ 12.5 mg. per bird per day from 24 hours before infection to 120 hours after infection	16	+32
2	11	25	4	0	None	0	+77
3	1	25	4	80	None	22	+23
3	4	25	4	80	.5% thiourea from 24 hours before infection to 45 hours after infection.	14‖	+19
3	5	25	4	80	2% silver asboloxane gamma from 24 hours before infection to 120 hours after infection	19	+44
3	6	25	4	80	5% silver asboloxane gamma as above	19	+13
3	11	25	4	0	None	0	+116

*A proprietary substance containing carbon and silver oxide.
†A variant of the foregoing containing in addition a considerable amount of zinc oxide.
‡Coccidiosis of varying degrees of severity was present, but birds probably died of malnutrition or toxicity.
§Isoctylhydroapocupreine dihydrochloride.
‖Seven early deaths from toxicity, four coccidiosis deaths, three late deaths from undetermined causes.

remaining two on the sixth and seventh days. No such prolongation of infection was noted when borax-urea was administered as a prophylactic (1.3) or during the release of the first merozoite generation (3.7).

The significance to be attached to this behavior is not entirely clear. As administered in the present tests, borax-urea cannot be considered coccidioidal against any stage of the parasite since, in all medicated groups, oöcysts were passed by surviving birds. The behavior of the infection under continuous medication suggests that the medicative process is attenuative, possibly acting as a depressant of the metabolism of more than one stage of the parasite. In the strict sense, the effect was not coccidiostatic since there was no indication that the life cycle was checked during medication. On the contrary, development apparently maintained continuity although the rate was unquestionably depressed. It is probable that increased host survival is due to two factors: (1) destruction of a portion of the weaker or less advantageously situated parasites; and (2) variable inhibition of the survivors. The latter would inevitably produce exaggerated irregularity of development and, since the more uniform the growth of the second schizogonous generation the greater the probability of destructive interstitial pressure, a decreased tendency to serious hemorrhage. Even should it be demonstrable that the second schizogonous generation is not directly attacked, the effect on this generation could be predicted on the basis of earlier temporal disruption.

As has been indicated by Hardcastle and Foster[3], borax is a toxic substance manifesting its effect on chickens in loss of weight and, if administration is prolonged, death. Figure 1 shows the weight reactions of groups 3.1, 3.2, 3.3, and 3.11 during a period of thirty-five days. It will be noted that the medicated birds showed no weight decline prior to the termination of medication, and that the post-infection gains of the infected groups was essentially parallel. Unfortunately, too few birds survived in 3.1 to allow much significance to be attached to this result, but it certainly appeared that urea reduced the toxicity of borax. Whether this was a direct detoxification or the result of the reduced dosage that was effec-

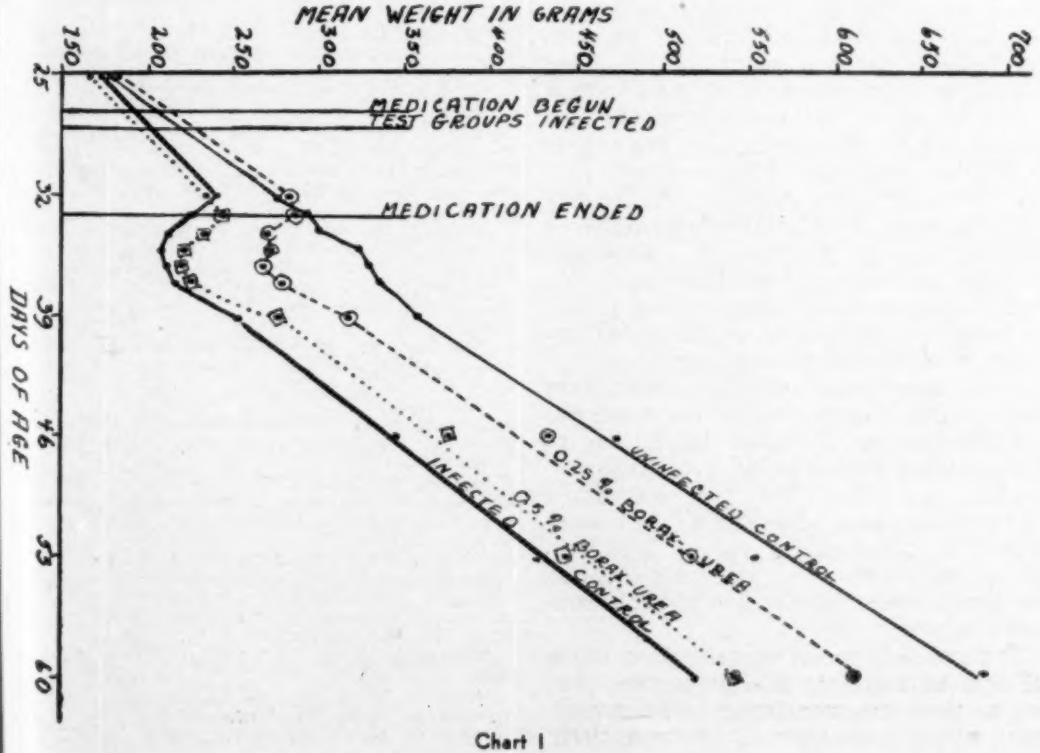

Chart 1

tive is a question not to be answered on the basis of present tests.

It is perhaps pertinent to speculate, at this point, on the significance of urea to coccidiosis control. As was shown by Fisher, Inkster, and Biely[9], urea alone is valueless in the control of avian coccidiosis. Harwood and Guthrie[10], however, found it to enhance the anticoccidial properties of sulfur. Borax appears to behave similarly: mixed with urea it is not only effective in smaller dosage, but its base of attack is broadened. The report (Harrison[11]) that thiourea has marked anticoccidial properties suggests possible gains from exploration of some of the relatively nontoxic, substituted ureas.

Of the three medicaments tested which possess some degree of anticoccidial value, each is patently distinct in qualities from its fellows. The place of sulfaguanidine is best summed by Levine[6] as a drug whose use would be justified ". . . under circumstances where it is almost certain that exposure of birds to lethal doses of coccidia will occur." In sulfamethazine, we have a drug apparently without prophylactic value, but possessing marked ability to terminate infection even after appearance of overt symptoms. In natural infections, borax-urea may turn out to have unusual value both because the effect is not sharply limited to a particular stage of the parasite and because the mixture is active when medication is commenced after the infection is well advanced. A further advantage, as pointed out by Hardcastle and Foster[3], is its relative availability and cheapness.

2) *The Ineffective Agents.*—Of the several substances listed in table 2, none offered promise for the control of coccidiosis. Whether by reason of marked toxicity or of low grade or absent anticoccidial power, all failed to significantly mitigate the condition of medicated infected birds.

Silver Asboloxane. — This proprietary combination of carbon and silver oxide was included because of initial indications of protozoacidal, as well as its recognized fungicidal, properties. The type containing only carbon and silver oxide (*gamma*) showed no anticoccidial value. That containing an addition of zinc oxide (*beta*) was severely toxic and of questionable anticoccidial power.

Thiourea.—It seems probable that thiourea does have anticoccidial properties (3.4) but, as these are manifested in accompaniment with a high mortality from toxicity, there is no indication for the use of this compound. Certainly, the recommendation of Harrison for the use of 1 to 2 per cent over considerable periods is completely without justification.

Sulfathalidine.—Since this compound was readily available, it was included in the tests. The results completely confirm Swales'[12] report of its ineffectiveness as an anticoccidial agent.

Vuzin .2 HCl.—Similarly, this compound with known protozoacidal properties was tried. It was patently without value against coccidiosis.

SUMMARY

A number of substances were tested as prophylactic or curative medications of *Eimeria tenella* infection (cecal coccidiosis) of the chicken. Of these, sulfaguanidine, sulfamethazine, and borax-urea mixtures significantly lowered the mortality. There is reason to believe that the attack was essentially different in each case. Other compounds tested proved ineffective or excessively toxic.

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[12]Swales, W. E.: On the Chemotherapy of Cecal Coccidiosis (*Eimeria tenella*) of Chickens. Canad. J. Res., D, (*22*), (1944): 131-140.

More on Podophyllin

In response to the item on page 287 of the October JOURNAL, Dr. Irving Ingram (MSC '39), Detroit, Mich., writes: "We tried it on 3 cases, and also on 1 case of warts on the teats of a cow, and found it gave excellent results. In fact, we had to apply it to only a few warts of a dog and they all disappeared in a few days." He also says, "Had I not read about podophyllin in the JOURNAL, I would not have written you, as the number of cases is too small."

Brucellosis Highlights*

American dairymen own some 30 million breeding animals, and require about 10 million replacements annually. The testing of 3 to 5 million head annually, therefore is not enough to "keep even."—*Dr. B. T. Simms.*

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There is no connection between agglutination titer and resistance to *Brucella abortus.—Dr. C. K. Mingle.*

• • •

Man is susceptible to all three types of Brucella, but in different ways. As usually observed, *Brucella abortus* produces a chronic infection; *Brucella melitensis* is more acute and often leads to pus formation; *Brucella suis* induces a disease intermediate between the other two.—*Dr. Wesley W. Spink.*

• • •

Of the Brucella-infected herds in Minnesota, 78 per cent were clean on first retest, 13 per cent had a few reactors on subsequent tests, and 8 per cent became problem herds.—*Dr. R. L. West, Sr.*

• • •

Calfhood vaccination is in Nebraska to stay. It has been used for years and the breeders like it.—*Dr. R. J. Snyder.*

• • •

Intradermic vaccination in the caudal fold has led to disastrous consequences in animals exposed to severe cold.—*Dr. T. O. Brandenburg.*

• • •

There are numerous reports of breeding difficulties following calfhood vaccination. —*Mr. Frank J. Astroth.*

When heifers, vaccinated as calves with strain 19, show a resurgence in titer of more than 1 : 200 it may mean field or active infection.—*Dr. C. K. Mingle.*

• • •

The use of strain 19 vaccine has not protected pigs against *Brucella suis* in Minnesota experiments.—*Dr. H. C. H. Kernkamp.*

*Some remarks made by Dr. H. E. Mullen, Baraboo, Wis., to members of the Southeastern Wisconsin Veterinary Association, Oct. 17, 1946, which were based on papers and discussions at the Regional Brucellosis Conference, St. Paul, Minn., Oct. 7-8, 1946.

Local (Nasal) Treatment of Equine Strangles

H. Steffan (*Ztschr, f. Veterinärk., 6,* May 1939: 217) describes a unique treatment of equine strangles (distemper) consisting of douching the nasal cavities with chloramine, with no other essential medication. In all cases, the malady recedes forthwith.

The treatment strikes the source of the infection, the place of its absorption into the circulation, and thus stops or inhibits further invasion of the lymph channels and nodes, even after the submaxillary ganglion is as large as a pigeon's egg. To appraise its value, the author goes on to say, account must be taken of the variation in the virulence of the epizoötics of different years.

The douching should be started the first days of the malady when scarcely more than a rise of temperature is present, and it should be repeated for two or three days notwithstanding the disappearance of the fever and other symptoms. A dose of caffeine may be given and repeated if indicated by the state of the circulation. No other treatment is necessary.

The idea is sound independent of the author's reassurance. An infection lying wide open for local treatment is nowhere else so commonly permitted to have its own way as in this disease. Trusting to the hope of fussing successfully with the effect of an infection on remote organs instead of coping with the hotbed is not good strategy in any event. Nasal douching for strangles at an early stage is, therefore, plain common sense and scientific. It should not be confused with medicated steaming or other inhalant practices after the local sepsis has expended its force.

There is no specific preventive for mixed bacterial infection in dogs, but an autogenous vaccine or bacterin often has a favorable effect.

The Treatment of Parasites of Domestic Animals with Phenothiazine

Sheep and Goats.—Phenothiazine is the most effective drug known for controlling the common stomach worm, the bankrupt worm, and the nodular worm. It is also effective against several other species of small roundworms, but not against *Strongyloides*, the whipworms, or tapeworms. If used in the proper dosage, it has no injurious effect. The urine of a treated animal turns red on exposure to air, but the color is due to a dye resulting from oxidation of the drug and not to blood.

The usual dosage of phenothiazine for adult sheep is 25 Gm., and for lambs under 60 lbs., 15 Gm. The dosage for adult goats is 30 Gm. It may be administered in capsules or boluses, as a drench, or mixed with the feed if the animals are accustomed to eating grain. There should be enough trough space for all the animals to feed at once; small or weak animals should be fed separately. Phenothiazine may also be mixed with the salt and kept before the animals, 1 lb. of the drug to 9 or 10 lb. of salt being used. The mixture should be fed in a covered trough to protect it from rain. A procedure suggested for sheep is to treat the ewes once in the early winter and once just before they are put on pasture. A phenothiazine-salt mixture should be kept before them at all times. It will probably be necessary to give one or more additional treatments to the lambs during the pasture season. Feeder lambs may be treated before being turned out on pasture.

Cattle.—Phenothiazine is recommended for treating stomach worms, nodular worms, and several species of small intestinal roundworms. It is not effective against certain other species of intestinal roundworms, whipworms, or tapeworms. It may be given as a drench, in capsules or boluses, or mixed with the feed. The dose for adult cattle is 60 Gm.; for calves it is 10 Gm. per 100 lb. of body weight up to 600 lb. A phenothiazine-salt mixture as recommended for sheep can also be used for calves, but not for dairy cows, since it may color the milk red. Cattle are often treated with phenothiazine in the fall when they come off pasture and in the spring before they are put on pasture. Other treatments during the grazing season may also be necessary, particularly in calves. Because of the red color which may develop, milk from dairy cattle should not be marketed for a day or two after the animals are treated with phenothiazine. It is a good idea to treat feeder cattle as soon as possible after they are bought.

Horses.—Phenothiazine is very effective against horse strongyles, but not against the large roundworms or bots. For adult light horses, the recommended dose is 20 Gm., and for yearlings, 10 Gm. For adult heavy draft horses, the dose is 40 Gm. For 2-year-old heavy draft horses, it is 30 Gm., and for yearlings, 20 Gm. At the University of Illinois, horses are treated with a mixture of phenothiazine and carbon disulfide in order to expel strongyles, ascarids, and bots at the same time. Horses should be treated with phenothiazine in the fall, winter, and early spring.

In some horses, phenothiazine may cause either a slight or a marked anemia. In a very small percentage, death may even occur. Severe toxic effects are uncommon, however, and are most likely to occur in sick animals and in those in poor condition or in advanced pregnancy.

Swine.—Phenothiazine is recommended only for nodular worms of swine. It is less than 50 per cent effective against the large roundworm, for which sodium fluoride or oil of chenopodium is preferable. Moreover, phenothiazine is sometimes toxic in young pigs, causing blindness and posterior paralysis. Although these are usually temporary, they may in some cases be permanent, and a few animals may even die.

Mix the phenothiazine with the feed at a dosage rate of 0.1 Gm. per pound of body weight per pig. One-fourth pound of phenothiazine mixed with the feed will treat 35 30-lb. pigs, 25 40-lb. pigs, or 20 50-lb. pigs. Divide the animals to be treated into groups of approximately the same weight and age, and provide ample room at the feed trough for all to eat at the same time. To avoid over-dosing, do not guess at the pigs' weight, but actually weigh representative animals at least.

Dogs and Cats.—Phenothiazine is not

recommended for treating any parasites of dogs and cats.

Chickens and Turkeys.—Phenothiazine is effective only against the cecal worm. It is not effective against the more pathogenic large roundworm or against tapeworms. However, since the cecal worm may carry the parasite causing histomoniasis (blackhead), it is advisable to treat turkeys for these worms. Phenothiazine is not a remedy for histomoniasis itself.

The dosage of phenothiazine for chickens and turkeys is 0.5 Gm. per bird. One pound will treat 900 birds. The drug is most easily administered when mixed with the feed, which should be fed in quantities small enough to be cleaned up in a few hours.—*Excerpt from Animal Pathology Exchange, University of Illinois.*

Acquired Resistance to Antibiotic Agents

The enthusiasm aroused by the discovery of tyrothricin, penicillin, streptomycin, and other antibiotic agents has been somewhat tempered by the realization that the microörganisms struck at rapidly set up a barrier to resist. The mechanism responsible for the barrier has, therefore, become a problem for fundamental research on the rôle of individual enzymes in metabolism. The presence of penicillinase does not solve the problem because that enzyme was by no means associated with all bacteria studied, and no relationship between the quantity of penicillinase contained in an organism and its susceptibility to the action of penicillin has been shown. The answer will probably be found in the search for an extracellular agency which remains to be held accountable for the inhibition. As was already shown *in vitro*, the action of penicillin against certain pathogenic organisms may have to be potentiated with specified chemical agents to achieve maximum therapeutic results. The clinic has but to wait for the decisions of the biochemic laboratory.

Brandly, Moses, and Jungherr (*Poultry Sci., 25,* (July, 1946) : 397-398) demonstrated significant quantities of neutralizing antibodies in the yolk of eggs laid by hens immunized by vaccination against pneumoencephalitis (Newcastle disease), and hens recovered from the disease. The demonstration suggested the use of eggs of immune hens for the preparation of a formalinized vaccine.

Phenothiazine fed to turkeys helps to eliminate the cecal worms but has no other effect on blackhead.—*F. R. Beaudette, New Brunswick, N. J.*

The mortality of pneumoencephalitis (Newcastle disease) ranges from 10 to 20 per cent in flocks of young fowl. While the enzoötics are widespread, and the situation needs calm attention as a whole, it is not alarming, according to *U. S. Egg and Poultry Magazine* for October.

Pneumoencephalitis of Fowl (Newcastle Disease) and Human Conjunctivitis

An outbreak of conjunctivitis in women exposed to fowl affected with pneumoencephalitis is reported to the *Journal of the American Medical Association* by its Palestine correspondent. An epidemic of 17 cases occurred in the small community of Mikve Israel in October, 1945. Only women were affected. Swelling of the conjunctiva, sclera, and tarsus developed after an incubation period of three days. The cornea was not involved. After a slight mucopurulent discharge, the symptoms subsided in fourteen days. The infection was confined to one eye. The epidemic stopped when the affected fowl were removed.

Poliomyelitis and Encephalitis Linked to Thyroid Activity

Because infantile paralysis and sleeping sickness occur in warm weather, when natural secretion of the thyroid gland is lowest, Dr. D. F. Holtman of the University of Tennessee concluded that there may be some relationship between the level of thyroid secretion and susceptibility to certain virus diseases.

In experiments on mice, he found that those treated with thyroid gland extract had much greater resistance to poliomyelitis than untreated mice. Moreover, poliomyelitis was tolerated much better when the animals were acclimated to cold weather, which stimulates natural secretion.—*Sci. Digest, Nov., 1946.*

A Case of Intestinal Herniation in a Chick

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Among a group of approximately 1-week-old New Hampshire chicks brought to this laboratory for postmortem and bacteriologic examinations, there was 1 which presented an unusual and interesting hernia of the major portion of the intestinal tract. The writers are not aware of a similar condition in a chick being reported in any literature.

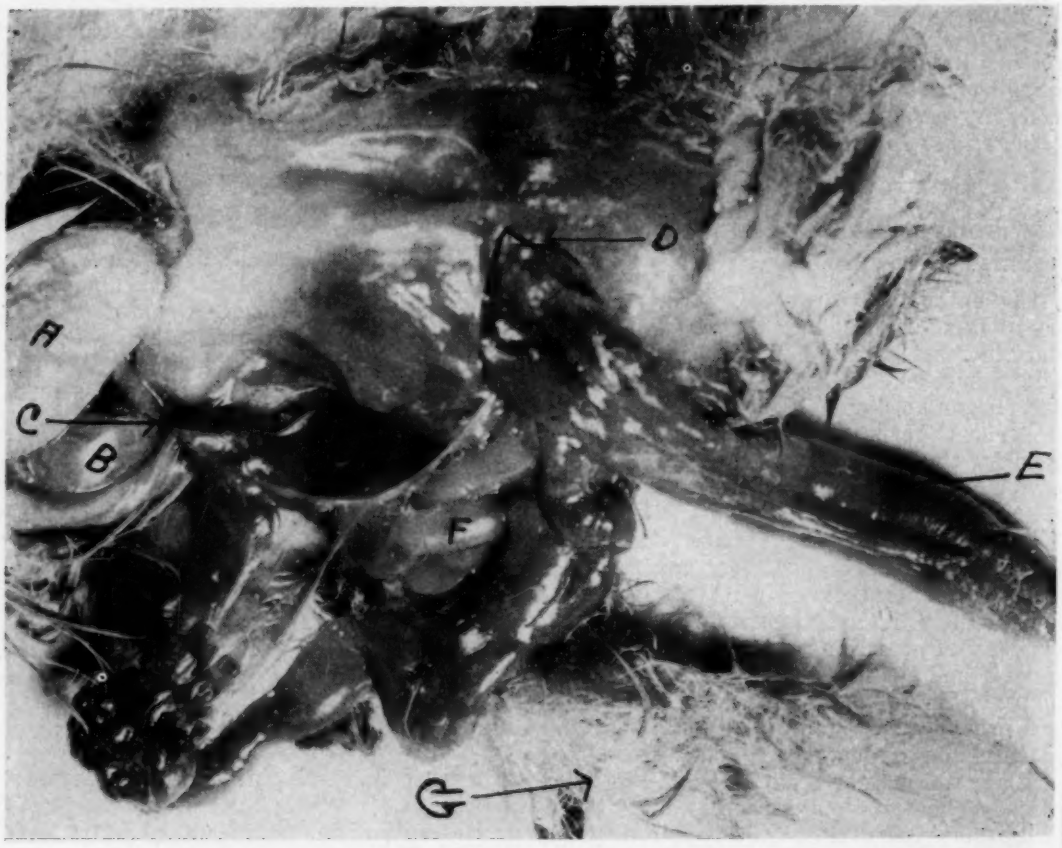

Fig. 1—Ventral view of chick with hernia exposed.
(A) crop; (B) yolk sac; (C) umbilical duct; (D) edge of opening in abdominal muscles; (E) duodenum; (F) small intestine; (G) right leg.

Prior to opening the skin and abdominal wall of the chick for examination of the internal organs, large, soft masses were noted lying beneath the skin in the abdominal and thoracic regions of the right side and the dorso-posterior region of the neck. On sectioning and lifting the abdominal skin up and over the ribs and other structures, the mass in the abdominal and thoracic regions was discovered to consist of the duodenum and pancreas, and the major portion of the ileum and cecums. A strand of glistening, mesentery-like tissue was seen to arise from one loop of intestine and to pass anteriorly to a structure dorsal and anterior to the crop. On further exposing the crop, the strand was discovered to be the umbilical duct attached to the half-absorbed yolk sac which was lying loose

From the Department of Poultry Science, North Carolina State College, Raleigh.

between the cervical skin and the dorsal cervical muscles.

The organs without the abdominal cavity had come to lie in the positions described as a result of a large break in the continuity of the abdominal wall of the right side just posterior to the last rib. The opening was sufficiently large to contain the intestinal loops readily; incarceration of the intestine was not noted. Microscopic examinations of the bowel contents in several regions showed vegetable material in various stages of digestion.

In view of the large opening in the abdominal wall, the matter of such a great portion of the intestinal tract lying outside the body cavity is not considered unusual. The location of the yolk sac, however, was unusual and it was our assumption that its position was simply the result of pressure exerted by the surrounding structures. That the yolk sac had been properly taken into the body cavity during the latter stages of incubation was evident from the presence in the posterior abdominal wall of a normal umbilical scar.

Encephalitis Ubiquitous in Ticks

Strains of spring-summer encephalitis virus in the Republic of White Russia were isolated in the ticks *Ixodes ricinus* L. and *Dermacentor pictus* Herman infesting (as nymphs or adults) man, cattle, horses, hedgehogs, birds, dogs, cats, squirrels, and bison in widely separated places. Strains of the virus were recovered by feeding nymphs on white mice or injections with suspensions of engorged adults. The ticks were collected from May through July, mostly in marshy forests.—*Rev. Applied Entomol., 34, (July, 1946): 114.*

Sulfonamides in Pullorum Disease

The effectiveness of sulfonamides in the treatment of chicks artificially infected at 1-day old with *Salmonella pullorum* was demonstrated by Bottorff and Kiser (*Poultry Sci., 25,* (July, 1946) : 395). The mortality of treated chicks was 40 to 50 per cent less than that of the controls. There was no significant difference from the three drugs used: sulfamethazine, sulfadiazine, and sulfamerazine. These drugs were given in the feed at various levels (0.75 to 1.0%) for five and ten days.

Bovine Type of Tuberculosis During the War

Professor Dr. Charlotte Ruys, head of the laboratories for public health at Amsterdam, stated that, although tuberculosis infection was more frequent during the war as a result of malnutrition, human type of the tubercle bacillus was found in most cases. The bovine type is spread especially by milk, which was rationed during the war, with resultant diminished consumption.

Before the war the bovine type was found more often in children than in adults, but during and after the war the difference in the incidence of the bovine type in adults and children decreased.—*J. Am. M. A.*

During an average lactation, a sow will secrete in her milk as much protein and half as much calcium as her entire body contains.—*C. C. Morrill, Univ. of Illinois, Urbana.*

Clavacin, which was isolated and produced by workers in the Vick Chemical Co. laboratories, possesses the property of neutralizing tetanus toxin.—*Sci. News Letter, June 1, 1946.*

During routine brucellosis testing in 26 herds, 35 reactors to the blood test also showed lesions of tuberculosis *post mortem.* Of these, 6 were generalized cases and were sent to the tank. When the remaining members of the 26 herds were tuberculin tested, 22 additional reactors were found, of which 6 bore no visible lesions.—*H. C. Kutz, Philadelphia, Pa.*

A new antibiotic agent, litmocidin, is reported in *Science News Letter* (Aug. 24, 1946). It is a pigment which turns red in acid and blue in alkaline solutions. Active against streptococci, staphylococci, and tubercle bacilli *in vitro,* it is much less effective *in vivo.*

African sleeping sickness, a disease which has been considered incurable, is being cured by treatment with a new drug, P-arsenosophenylbutyric acid. Intramuscular and intravenous injections seem to be equally effective; 90 per cent of the cases have responded in one week.—*Sci. News Letter, Aug. 17, 1946.*

NUTRITION

Food Particle Size and Quality in Relation to Disease in Artificially Propagated Quail Chicks

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IN THE CONDUCT of studies and experiments in quail feeding and nutrition at the Patuxent Research Refuge, Bowie, Md., certain widespread conditions that are typical of the results of feeding practices employed in propagating quail on quail farms became evident. In conducting investigations to determine the cause of losses which occurred, it became apparent that certain fibrous elements in the food were responsible for a high percentage of the loss. Other workers have shown that certain types of fiber are beneficial in the diets of poultry. Extensive work in determination of values of fiber from different sources has been reported by the Oklahoma Experiment Station workers.[1, 2, 3, 4]

Morris, Heller, and Thompson[1] found that the amount of fiber can be raised to 8 to 9 per cent of the ration with desirable effect on chick growth, mortality, feed consumption, and egg production. Oat hulls and alfalfa meal were used as the sole source of fiber in successive years. Ten per cent fiber resulted in slower growth but did not result in stunted birds.

The use of cotton burrs as a source of fiber was found by Penquite and Thompson[2] to result in decreased viability and growth rate in proportion to the amount used in the ration. In their 1934 studies of difference in quality of fiber fed domestic poultry, they used alfalfa stems and cottonseed hulls at levels of 4, 7, 10, and 12 per cent. Mortality of chicks increased with increase in percentage of fiber in the diet. Mortality was significantly higher with cottonseed hulls. There was some enteritis, though it was not significant.

In other trials,[7] peanut hulls, alfalfa stems, cotton burrs, and dried wood pulp in amounts of 3.65 to 18 per cent were used. Increase of fiber decreased viability. Cotton burrs decreased growth and viability in proportion to amount used. With exception of alfalfa stems, the viability of chicks decreased rapidly when fiber content was increased above 10 per cent in the ration. Penquite[4] concludes that percentages of nontoxic fiber from 4 to 10 per cent cover the optimum range for best results. Feather development was improved by increase in the percentage of fiber.

In successive years at the Patuxent Station, a series with three duplications making a total of 16 experiments were conducted on the basis of three principal factors, *i. e.*, (1) food particle size, (2) level of fiber tolerance, and (3) composition of cereal mixtures, for determination of mortality cause and for the production of a satisfactory diet.

In the work reported in this paper, conclusions are based on the results of feeding tests with 3,716 Bobwhite quail and the postmortem studies of 1,441 birds of which 117 were sacrificed for examination.

A part of the results of these studies concerned with nutrition have been previously reported (Nestler[5]) and (Nestler, Coburn, and Titus[6]). All tests were started with day-old chicks and the greater number of tests were terminated by the tenth week.

Early in the studies, many birds that showed a soiled vent and liquid feces in the lower bowel, characteristic of enteritis, were found to have an accumulation of particles of grain hulls and bran in the gizzard. Grain hulls in the order of their abundance and apparent importance were

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oat, barley, and buckwheat; bran particles were chiefly corn and wheat. The amount of such accumulation varied in different birds from less than a dozen particles to instances of complete filling and over distension of this organ. In the cases of more complete filling of the gizzard, there was often an even mixture of oat hulls and grain-bran particles with apparently complete digestion and removal of all softer or digestible portions. It was estimated that 10 per cent of the mortality caused by fibrous elements in the feed was due to such stoppage and resultant starvation. The remaining 90 per cent of loss due to such elements in the feed resulted from bacterial invasion of the body through multiple breaks in the intestinal mucosa. These breaks were directly traceable to the mechanical action of the fibrous elements in the feed.

Associated with the accumulation in the gizzard there was most commonly found an inflammation of the intestines, the products of which were very fluid, putrid, and occasionally blood-stained. The variations observed were apparently dependent upon the stage of development of the condition. In no instance was an infestation of Protozoa or other animal forms found.

As is generally the case in instances of digestive disturbance due to a common cause in any group of individuals of the same species, there was a group of symptoms with corresponding postmortem findings. Chicks dying during the first week of their existence showed autopsy pictures of great similarity. These findings in the order of their importance were an obstruction in the gizzard, a mild to severe enteritis, and an accumulation of fluid fecal material in the colon.

The longer the individual had survived the malady, the greater were the variations in lesions found at autopsy. In addition to the various degrees of impaction of the gizzard, there was a definite course of development which could be traced in a series of birds. The rapid growth made by young quail necessitated frequent and regular feeding and, in many instances of simple impaction of the gizzard, the birds continued to eat after the stoppage was complete. As a result, the crop and esophagus were often found well-filled with food. The cause of death in these cases was apparently starvation due to inability to digest and assimilate the food. Associated with progress of the enteritis in the absence of impaction there was evidence of a loss of appetite, as practically all of the advanced cases showed an empty alimentary tract.

Evidence of infection and absorption of toxic substances was found in congestion of the lungs, pneumonic areas, hepatitis, and nephritis. One or more of these signs were evident and, more rarely, all of them were found in a single specimen.

The enteritis resulting in fluid droppings was responsible for soiling of the feathers at the vent and under parts of the body. In many instances, an inflamed and partially everted cloaca likewise had resulted. This exposed, inflamed organ incited picking of the vent and all of the associated evils attendant on such a habit. Even where picking did not occur, there was often the formation of scabby, sealed vents causing fecal accumulations and autointoxication.

Doubtless many birds recovered from the less severe cases of impaction and enteritis. Certain of these were unthrifty and stunted birds, many of which later succumbed to other unfavorable conditions. For purposes of simplicity in an effort to evaluate the proportion of loss due to various causes, this series of related symptoms and lesions has been called an "entero-complex." Other causes of deaths encountered in the studies included cannibalism, perosis, and other dietary deficiencies, mechanical injury, and weak chicks.

In one feeding experiment, so many birds were lost almost simultaneously (within a week from the time they were placed on a certain diet) that an epizoötic was suspected. Practically all birds dying in this group, however, showed a form of enteritis that was not transmissible to other birds. Repeated tests, using tissues as well as cultures from the dead birds, failed to reproduce the disease in a single instance.

Later analysis of the losses showed the greatest mortality to be in birds fed on low protein diets. It does not follow that the low protein level was responsible for the loss, though it was considered to have been an important factor, since faulty nutrition has often been observed as a predisposing cause of disease. Lower protein levels in the diets studied were associated with corresponding increases in the coarse

or more fibrous foodstuffs. In the instance cited, the increase was in the low-protein, basal ration which contained a higher per-

TABLE 1—Particles of Oat Hulls in Various Grinds of Whole Oats

Length of Sliver, mm.	Particles in 1 Gm. sample			
	Wiley, Medium	Hammer, 2/32"	Hammer, 3/32"	Hammer, 4/32"
2	19	64	152	163
3	17	7	102	178
4	3	4	78	133
5	1	1	32	84
6	1	0	1	53
7	0	0	4	15
8	0	1	4	8
9	0	0	0	2
	41	77	373	636

centage of white corn. It was evident that certain portions of the coarse material which had passed the gizzard were largely responsible for the enteritis.

It is quite probable that individual selection of food particles by the chick determines whether these birds get an undue proportion of hulls or bran from the feeds being offered. Even though deaths may result only from this selective trait, this possibility should warn against the danger of commercial or home-mixed feeds which make available a high percentage of such materials.

It was quite evident that once the enteritis had started there was a loss of appetite, as most of the affected birds had empty crops. Due to inappetence and consequent failure to feed, the birds rapidly became weak. The weakness was contributed to by the resorption of toxic substances produced by tissue destruction and bacterial growth from the inflamed and diseased intestinal tract. In these cases, the picture was markedly different from that of the chick starving from failure to learn how to eat. In the former, there were lesions in various visceral organs showing the results of the absorption of toxins while, in the latter, these were absent and all organs appeared more nearly normal.

Though the loss on these test rations was considered high, they were being considered within the limit of probable loss due to the lack of any greens or other alterative in the diet. No comparison was at hand with results of similar feeding practices in which a dry mash ration only had been fed.

FOOD PARTICLE SIZE

Numbers of birds in each experiment varied according to the number which were available in a particular hatch but always approximated 20 birds to a brooder pen, with three or more pens to each grind or food test.

Thus, for the determination of the effect of various grinds of oats, 22 quail chicks were placed in each of 12 battery pens. All pens received the following mixture:

	Parts
Ground whole oats	30.9
Dehydrated alfalfa leaf meal	5.0
Soybean oil meal	24.0
Peanut oil meal	16.0
Dried buttermilk	16.0
Dried whey	4.0
Pulverized limestone	0.8
Special steamed bonemeal	1.0
Fortified cod liver oil	0.3

Four grinds of oats were studied, three pens of birds being placed on each grind. The finest grind was made in a Wiley Laboratory mill with its medium screen; the other three were made in a hammer mill with screens of 2/32-in., 3/32-in., and 4/32-in., respectively. Analysis of particle size in various grinds is given in tables 1 and 2.

TABLE 2—Physical Composition of 1 Gm. Sample

	Wiley, Medium	Hammer, 2/32"	Hammer, 3/32"	Hammer, 4/32"
Hulls, 2 mm. or longer	0.0050	0.0115	0.0625	0.0985
Coarse particles including hull less than 2 mm. long	0.1235	0.1375	0.2815	0.3495
Fine particles that passed through a 0.838 mm. sieve	0.8715	0.8510	0.6560	0.5520
Total	1.0000	1.0000	1.0000	1.0000

While the number of particles 2 mm. or greater in length is not significantly different between the 3/32-in. and 4/32-in. grinds, the percentage of survival of birds at four weeks was significant. Of the birds fed on the Hammer 3/32-in. grind, 76 per cent survived while of those fed on the 4/32-in. grind, only 55 per cent survived. Survival on the other two grinds, Hammer 2/32-in. and Wiley medium, was identical at 65 per cent. The fineness of these last two grinds influenced the palatability and consequent acceptance by the birds.

From the standpoints of survival, live weights, and feed consumption through

the eighth week," the Hammer 3/32-in. grind was significantly better statistically than any one of the other three.

LEVEL OF FIBER TOLERANCE

For determination of the relationship of fiber to the "entero-complex," 20 chicks were placed in each of ten colony brooders and in each of ten battery brooders. Two basal feed mixtures used for the diets had the following formulas:

Low Fiber Basal	*Parts*
Pearled hominy	45.5
Sardine fish meal	21.0
Dried buttermilk	25.0
Dried brewers' yeast	5.0
Pulverized limestone	1.0
Salt mixture	2.0
Fortified cod liver oil	0.5
	100.0

High Fiber Basal	
Pearled hominy	17.1
Alfalfa meal	32.0
Sardine fish meal	18.0
Dried buttermilk	25.0
Soybean oil meal	5.0
Special steamed bonemeal	0.4
Salt mixture	2.0
Fortified cod liver oil	0.5
	100.0

These basals were combined in such a way as to obtain fiber levels of 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 per cent. Each fiber level was fed to one group of birds in a colony brooder and to one group in a battery brooder. Two birds from each diet, 1 from a colony pen and 1 from a battery, were sacrificed on five occasions during the first two weeks for examination.

It was noticed in some of the sacrificed birds and in some of those which died of natural causes that there had been much selectivity involved with the feed. Some had taken hominy particles exclusively, whereas others had eaten large quantities of alfalfa particles. In fact, in several instances, much alfalfa was found in the gizzards, whereas the diets fed the birds involved were very low in alfalfa.

The diets were ground to a flour to prevent such selectivity. However, mash of such fineness was undesirable. Powdery feed cakes in the nostrils of chicks and promotes picking. Also, such feed is unpalatable to the birds. Pelleting of feed would seem to be the only satisfactory solution to such a problem. Effects of inclusion of various percentages of fiber in the diet are shown in table 3.

TABLE 3—Mortality Associated with Varying Percentages of Fiber in the Diet—First Two Weeks

	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %	9 %	10 %	Total
Colony	4	9	6	9	6	7	5	10	6	10	70
Battery	1	3	3	5	2	6	10	8	8	6	52
Total	5	12	9	14	6	13	15	18	14	16	..

Cannibalism as a cause of death was more prominent in the colony groups and was probably unrelated to the percentage of fiber in the diet.

COMPOSITION OF CEREAL MIXTURES

Feeding trials using various grains singly and in combination with corn on a 50:50 basis, with the Hammer mill 3/32-in. grind, were made for feed efficiency and survival tests.

A comparison of the various grains as the sole cereal in a growing diet showed millet outstanding as the one on which most birds survived through both sixth and tenth weeks. Buckwheat and kaffir were of about equal value. There was over 50 per cent mortality on oat groats, barley, rye, wheat, and oats, with mortality increasing in order of cereal named.

In live weight comparisons, all cereals excelled rye. Whole oats, oat groats, kaffir, and rye gave the poorest results. Millet as the sole cereal gave the best results.

Various grain mixtures with ground yellow corn 50:50 as a constituent of growing diets showed the greatest survival on the millet, with rye in second place. Through the sixth week, the survival rate on millet and on corn alone was the same. Rye continued in second place. The highest mortality was on kaffir.

Live weight of birds on the cereal-corn combinations at 4 weeks of age showed those on millet significantly heavier than those on corn alone, oat groats, or barley.

Likewise, those on wheat, whole oats, rye, or buckwheat weighed significantly more than those on oat groats. At six weeks, the birds on corn alone and on barley weighed slightly more than those on millet. This difference, however, was not great.

SUMMARY

A disease complex in Bobwhite quail chicks, due to mechanical injury from certain food constituents, is described. From the standpoint of survival, live

weights, and feed consumption through the eighth week, the Hammer mill 3/32-in. screen grind was significantly better statistically than any of three other approximate sizes.

The inclusion of alfalfa meal as a source of fiber did not influence mortality rates when used in amounts of less than 7 per cent of the diet.

Of nine cereals used in the diet of growing quail, millet consistently gave the best results considering survival, bird weights, and feed consumption. Greatest preference in a choice of mashes based on the cereals under consideration was for the one containing millet as the sole cereal.

Any of the cereals successfully replaced half of the corn in the diet, millet, wheat, and rye being the leading three.

DISCUSSION*

DR. B. S. POMEROY (St. Paul, Minn.).—This is of extreme interest to me because of our problem in turkeys this last year, that is, different grinds of feed used, and the diarrhea problem. I think some commercial feed manufacturers probably have experienced the same thing. It may throw a helpful light as far as turkeys are concerned, because I feel that they are somewhat analogous to quail in their ability to start eating and picking.

DR. DURANT (Columbia, Mo.).—We had a little experience in the use of barley. We had day-old chicks dying rather mysteriously, and for some reason we suspected that the grind of barley might have been the cause. We put a bunch of young chicks on barley and the result was rather spectacular. They all died in a few days, and examination showed that coarse barley cut the intestines to ribbons, literally chewed them up, as it were. It was 100 per cent fatal. We immediately eliminated the barley. We didn't try to reduce the size of the grind but just took it out of the diet and had no further trouble.

DR. C. D. EBERTZ (Richmond, Va.).—Do you think that a finer grind, maybe a 4/42-in., if it were pelleted so that it would be palatable, would be preferable to a coarser grind?

DR. COBURN: I am not sure about that. The reason we were interested in trying out the oat hull was because it has been reported that there was a desirable element in oat hulls. The finer grinds are being pelleted and proving successful, but the particle, according to our figures, must be below 3/32 in. If you get a sliver above that, I don't know whether pellets can cover up the sharp point or not, but a day-old quail or baby chick will have difficulty with pellets of ordinary size. You must have a very fine pellet if the gizzard is less than a quarter of an inch in diameter.

DR. JOHN DELAPLANE (Kingston, R. I.).—I think there is a lot of interest in what the Doctor has brought out. I also would like to raise this thought. Being brought up in the West, I thought all oats were the same. I think when we are doing this work, it would be well for us to get some idea of the type of oats used in these studies, and I think that probably we are getting somewhere in this respect.

DR. HURST.—I would like to know if data have been collected relative to the mesh of the alfalfa used, and what effect the more finely ground alfalfa would have *versus* the coarser grind.

DR. COBURN: In order to be consistent with our type of fiber, it is ground 3/32-in. That was the size particle that was most successful in all of our diets, so we stuck to that.

*After the presentation of the paper before the section on poultry, a brief discussion followed.

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"Yellow Fat" as Observed in Mink

Beginning in mid-July and continuing at the present time, we have been confronted with a high death loss due to "yellow fat" among ranch-raised mink kits. For 1946, the death rate from this factor as observed in this laboratory has been far greater than from any other cause. To date, we have had 54 ranchers bring specimens to the laboratory; 26 others have written or telephoned, and we have visited seven ranches so affected.

"Yellow fat" usually begins before the kits are separated or at the age of 10 to 12

From the Wisconsin Conservation Department, State Experimental Game and Fur Farm, Poynette, Wis. (McDermid); and the United Mink Producers Association, Great Lakes Ranch Service, Poynette, Wis. (Ott).

weeks. This condition always strikes the biggest and healthiest animals on the ranch. The larger mink (usually the finest in the litter) consume more than their share of the feed—the mink which are shoved away from the feed board are not affected.

The first symptom noticed is a semi-paralysis of the posterior limbs. The mink appears normal and has a normal appetite. It would seem that the animal had insufficent strength to stand so it prefers to rest on its chest and abdomen and use a paddle-type movement. The abdomen appears enlarged due to the rolls of fat in the groin region and the loss of tone in the abdominal muscles. Frequently, a black and tarry diarrhea is present.

Upon postmortem examination, the first condition usually encountered is a gelatinous, watery exudate between the pelt and the flesh. The flesh in the latter stages of the disease has the watery appearance of veal. There are two distinct rolls of hard, yellow fat in the groin region. The fat is a dark, greyish yellow with petechial or ecchymotic hemorrhages throughout. When the abdominal cavity is opened this same type of fat is observed in the mesentery and embedding the kidneys. Frequently, the liver shows a fatty degeneration. The spleen is usually enlarged one and a half to two times its normal size, and often the intestinal walls are chronically thickened. Stomach ulcers are common postmortem findings. Strangely enough, this condition is being observed on ranches having many years of experience as well as on new ranches.

The one constant factor we find in analyzing the diets fed by the ranchers is the high percentage of animal protein. The old axioms "a growing kit cannot eat too much" and "you can't overfeed horse meat" are apparently the cause of most of this trouble. In our analyses, we find that basing horse meat at 17 per cent, fish at 12 per cent, and tripe at 5 per cent, the rations fed by ranchers having trouble all show an animal protein in excess of 13.5 per cent of the total mix on a dry weight basis. Of approximately 100 ranchers using a feed ration composed of 11 per cent protein, none have reported losses from "yellow fat" on any of these ranches.

Our recommendations have been to substitute tripe for the high animal protein for ten to fourteen days and to feed about one-fourth of the usual quantity of feed. The kits must be separated before this drastic cut in the daily food intake is inaugurated; otherwise they will destroy each other. It is also obvious that, with only 1 animal to a pen, the exact amount of feed given any 1 animal can be regulated with certainty. Since all of the mink will not be in the same stages of "yellow fat", the rancher should observe his mink closely and start some of them back on a full 10 to 11 per cent protein ration earlier than others. Ten to fourteen days is the longest any mink need go on the protein-deficient diet.

The theory behind the starvation diet is to force the mink to utilize and deplete the abnormal fat deposits. The most practical method is starvation. A plentiful supply of clean fresh water should be available to the animals.

We have, in many instances, used 1/50 gr. of thyroprotein intramuscularly with excellent results. This has been used on ranches in conjunction with the starvation diet—with only the animals showing paralysis being treated.

Research is now under way to determine whether the acid-base disturbance in the diet is a predisposing factor. Bacteriologic studies are being conducted to ascertain whether the Salmonella genus of organisms sometimes found are of secondary or primary importance.

An interesting note in passing is that, on many ranches having "yellow fat" disturbances, only certain strains of mutation mink are affected while, on other ranches, it affects any type of mink. This might indicate a genetic tie-up with regard to the amount of nutrition necessary for different strains of mink.—*A. M. McDermid, D.V.M., and George L. Ott, Ph.D., Poynette, Wis.*

Studies made by Moorhead and Weiser, Ohio State University, showed that food-poisoning strains of staphylococci were being harbored in the gut and excreta of the house fly for eight days.

Feeding trials conducted by Groves, McCullough, and St. John of the Washington Agricultural Experiment Station (*J. Agric. Res., 73*, Sept., 1946:150-165) indicated that orchard sprays of lead arsenate are much less toxic for pigs than generally supposed.

EDITORIAL

Poultry Mortality

THE BUREAU of Agricultural Economics, USDA, gives the adult-poultry mortality of recent years as follows:

1941—19.1 per cent 1942—19.4 per cent
1943—16.2 per cent 1944—18.4 per cent
1945—17.7 per cent

The mortality of poultry, therefore, remains notoriously high. Frequently, the veterinary press has marveled that a branch of animal husbandry could stand up under that much strain. Were any other class of adult farm animals to die off at that rate, animal industry would sink to a staggering level and drag down the whole country's economy at a frightening rate. The loss of adult poultry in 1945 in terms of dollars was 150 million, and that does not embrace the broilers, the pullets under laying age, or the chicks of the brooder house. The turkey-raising branch admits an annual death loss of 25 per cent before reaching the market.

Reading along and between the lines of the poultry press, poultrymen are getting uneasy — disappointed, like the sufferers from cancer, at the slow progress of the research pathologists, having obviously been carried away with the notion that the Bankhead-Jones Act of 1935 was going to swish poultry plagues from the country forthwith. The crafty ways of disease and the plodding ways of scientific research do not appear to have been taken into the calculation. Naturally, the expectant beneficiaries of an appropriation made suddenly to launch a research program are disappointed. The appropriation came about a century late and, through the years, public funds for veterinary medicine consistent with the money value and social needs of farm animals were "just too funny for anything" (*see*, files of the Congressional Record). So the chickens have come home to roost! No wonder.

When the Hon. Wm. H. Hatch, congressman from Missouri, proposed the founding of a bureau of animal industry, his measure caused belly laughs (*see, ibid.*); consult also the memoirs of the late V. A. Moore, dean of the New York State Veterinary College, or the biography of Rush Shippen Huidekoper, about the tribulations of one who seeks funds to promote veterinary research and education. When this writer *et al.* urged, in vain, the Illinois legislature to pass a veterinary practice act year after year, the politicians of town and country got quite a kick out of calling the measure "The Stud-Horse Bill." A glance through livestock statistics would have shown (in round numbers) 12,000,000 horses, 2,000,000 mules, 45,000,000 cattle, 50,000,000 sheep, 45 to 50,000,000 hogs—value $3 billion. The annual losses from hog cholera alone were running around $50,000,000. The poultry-disease load was carried by the housewives of the farms, unseen. There were losses galore from gapes and roup and cholera-like diseases. Quoting from *Veterinary Military History*, "The American people act only on catastrophes." These historical facts have to be told to explain why the laboratories created by the Bankhead-Jones Act are check-mated by meager appropriations and haven't driven poultry plagues to kingdom come. You can't bribe disease to behave with an all-day sucker. It takes time and patience and laborious research which has to be carried out with rubber checks — insufficient funds. That's the way it has looked to the outside reader of the poultry press since research suddenly became an obsession unaware that disease of gregarious fauna among congested populations is a too terrifying thing to vanquish at the drop of the hat. The researches of fifty or more years ago which made the raising of the mammifers of the farm quite stable were started in the poultry industry only about six years ago, thanks to the Congress of 1935. So, if leucosis which is said to cause around 45 per cent of the death losses has not been subdued, more, not less, money should be spent

to solve the puzzle. Patrons of cancer research haven't walked out on the cancerologists because no cure has been discovered.

Poultrymen will have to become analysts of the veterinary history of the United States to get at the root of their troubles. In that will be found everything there is to be overcome to master their disease problems.

Editor Hanke (*Poultry Tribune*, Dec., 1946), writing mainly on leucosis, points out that poultry research is being delayed for lack of facilities to expand. In view of the long past, that is understandable. For years upon years our people spent practically nothing for comprehensive veterinary research and education and painfully little went to poultry. The way to the objective was neither known nor eagerly sought. When there is plenty to eat, few get interested in "how come." Editor Hanke, in a scholarly article, calls expansion of facilities at the Michigan regional laboratory a "must," in pointing out that the leucosis program is being hindered. That's what the veterinary profession has been saying of all farm-animal diseases since time out of mind. The anguish of Salmon, Melvin, and Mohler in that respect is still vivid. The importance of controlling farm-animal diseases has not been sold to the man-in-the-street. Perhaps the organized poultry industries can help to do that. The $150,000,000 death loss in 1945, which means $1.5 billion per decade, ought to be impressive. The poultrymen are better organized and work closer to more people than any of the other branches of animal husbandry.

Dr. Chari Ormond Williams of the National Education Association told the Congress of 4-H Clubs (*Chicago Herald-American*, Dec. 4, 1946) at the Stevens hotel that "The disparity in expenditures for luxuries and education in the United States is a national disgrace." That tells the whole story better than we have dared, although applied to special education and research, "tragedy" would be a better term than "disgrace." The poultrymen who have just awakened to the terrors of animal disease have the advantage of knowing (if they will) that great contemporary populations and vast holdings of essential animals long preceded any systematic attempt to provide consistent research and education for the benefit of the citizen and his animals. The advantage is that from here on the masses have but to be impressed with their responsibility in the maintenance of their food supply. The machinery, formerly unborn, is set up and operating. It needs only to be fueled and improved. Another advantage the poultrymen have is that an era of mutual respect has superseded the time when the folk of the farm were hicks to be exploited. The agricultural and veterinary colleges, the 4-H Clubs, and an altruistic veterinary profession have built a wider world for the poultry industry to move into. Movements to reduce poultry mortality are in good and willing hands.

Conflicting Meeting Dates

Every year about this time, a lot is heard about conflicts in dates of veterinary association meetings and conferences. The fact that no less than twenty such meetings are scheduled for January, 1947 (*see* "Coming Meetings" in this issue), has again focused attention on the problem. As a result, the AVMA office has been asked by the secretaries of some of the state associations to see if anything can be done about it.

The number of concurrent association meetings and conferences in the month of January has been a real problem for several years to AVMA officers, particularly the president, who usually receives a number of invitations to attend meetings with conflicting or overlapping dates, or with dates so close that they entail an almost impossible travel schedule. Such matters are difficult to reconcile, to say nothing of the strain on an individual forced to be "on the road" for weeks at a time almost without let-up.

There are other problems, of course. Recently, the National Veterinary Exhibitors' Association has undertaken to compile a list of veterinary meetings to be held in 1947 and 1948 to help its members plan their participation in those meetings which feature commercial exhibits as a part of their programs. Moreover, the state association officers frequently have difficulty in obtaining some of the speakers they want because of previous commitments, and they also find that exhibitors cannot make their meetings because of the complicated schedules.

It does not seem likely that much can

be accomplished in eliminating conflicts in such months as January unless there is concerted action and a willingness to give and take on the part of those organizations whose meeting dates are set either by their by-laws or by long-established custom. However, in view of the request made to the AVMA office, a letter has been circulated to all state and provincial associations to obtain information about their meetings, and their reactions to the proposal for a clearing-house on meeting dates. The results of this survey will be reported in a future issue.

"Veterinary Fund Growing"

"The American Veterinary Medical Association reports that it has raised more than half of its proposed $100,000 fund to be devoted to the study of animal disease problems. This is the fund that the veterinarians are raising all on their own. They are not asking anybody else to contribute, least of all Uncle Sam. The money will be used to help finance disease studies through veterinary colleges and research laboratories.

"It is to be hoped that they will reach their goal, as no doubt they will. There is great need for the work, and great promise that it will produce results important to every producer of livestock. And it is not only a unique but a very creditable thing that this association is not seeking a handout from the federal treasury. It must be the only one!"—*Chicago Daily Drovers Journal, Nov. 21, 1946.*

—Acme Photo

Three battle-scarred veterans of the K-9 Corps, which participated in exercises in Chicago recently. Shown with their trainers, they are (left to right): "Rainey", "Tuffy", and "Satan."

CURRENT LITERATURE

ABSTRACTS

Wartime European Chronicles*

Sulfonamides Provoke Azoöspermia.—An experimental study of sulfonamides on spermatogenesis in dogs and guinea pigs gave positive evidence of diminished sperms per field (less than 100), lowered motility, deformation, and monstrosities lasting for a week or more after the medication was stopped. From twenty-six days of dosing, the azoöspermia was complete and, sixteen days after the drug was withheld, the secretion was again normal in number and value. The danger of sulfonamides in this respect lies only in excessive dosing and should, therefore, not frustrate their medicinal use. —[*Minguet: Thesis. Paris, 1940, Abstr. Rec. de Méd. Vét., 96, (Nov. 1940): 428.*]

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Revive Allergic Theory of Periodic Ophthalmia.—For several years pursuant to the experimental work of Manninger on periodic ophthalmia of the horse and the histologic observations of Gmelin and Stock, there has been a tendency to consider the disease an anaphylactic phenomenon provoked by the absorption of albuminous residue from the large intestine. The theory explains its ecologic character and attaches blame to digestive processes modified by strongyles and ascarids. The thesis suggests the finding of antianaphylactic (desensitizing) substances as the treatment such as autohemotherapy, partially lysed blood, milk, etc., given parenterally. There were marked benefits obtained from these but the number of cases treated does not justify a definite conclusion.—[*Carleur: Thesis. Paris, 1940. Abstr. Rec. de Méd. Vét., 96, (Nov. 1940): 130.*]

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Oak Bud Poisoning.—A plant poisoning in cattle and buffaloes clinically similar to hemorrhagic septicemia occurred in Bulgaria. Pulmonary edema, catarrhal or croupous pneumonia, pulmonary gangrene, and gastroenteritis were characteristic, but the temperature was subnormal in lieu of the febrile state of hemorrhagic septicemia, and the reaction of the thoracic lymph nodes was more pronounced (acute inflammation, hyperemia, hypertrophy). The milk was bitter. The mortality was high; treatment unsuccessful. The danger lay in turning animals into the forests too early.—[*Thomott, Zw.: Oak Bud Poisoning (title translated). Deutsche Tierärztl. Wchnschr., Jan., 1939.*]

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Ovine Brucellosis.—The excretion of *Brucella melitensis* by naturally infected ewes after parturition was reported by Tazima, Ito, Okuno, and Itabasi in the *Japanese Journal of Veterinary Science* (Oct., 1939). The Japanese authors showed that ewes that have aborted remain carriers of the germ through the next normal delivery and are, therefore, important in the control of ovine brucellosis which also is a common source of human infection. In only 1 out of 9 reactors were the authors able to isolate *Br. melitensis* from the urine or vaginal mucus. Only ewes that had previously aborted shed the organism in their milk.—[*Tazima, Ito, Okuno, and Itabasi: Ovine Brucellosis (title translated). Japanese J. Vet. Sci., Oct., 1939.*]

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Prophylaxis of Coital Infections.—An ointment of trypaflavine 5 per cent was used to control contagious vaginitis and trichomoniasis in the region of Weisbaden. The ointment was applied in the vagina before cows were bred. Results in trichomoniasis were excellent, although bulls chronically affected were eliminated. The newly infected were cured, and spreading of the infection through the herd was prevented. At that strength, the ointment is slightly irritant but was not harmful. Some employed the ointment at 3 per cent.—[*Soentgen and Moser: The Prophylaxis of Coital Infections in the Region of Weisbaden. Berl. und Münch. Tierärztl. Wchnschr., 28, (Feb. 1940): 85.*]

*These abstracts appeared in *Receuil de médicine vétérinaire*, Paris, and represent important research work in veterinary medicine conducted during the wartime blackout. They cover abstracts from foreign journals other than English. They were translated by the editors.

Malformation of the Heart in Calves

A 14-day-old calf was found to have a pseudotriocular heart with a persistent ductus arteriosus, patent foramen ovale, and atresia of the conus arteriosus. A 10-day-old calf with pseudotriocular heart also had these changes plus displacement of the atrial septum to the left. In a third case, a 14-day-old calf was found to have transposition of the aorta to the right side, a patent foramen ovale, and persistent ductus arteriosus. The left ventricle appeared as a blind sac.—[*P. I. Stenius: Three Cases of Malformation of the Heart in Calves. Skand. Vet.-tidskr., 36, (1946): 385-400.*]

ALFRED G. KARLSON

A Survey of Literature from Holland

[The following is a continuation (see December JOURNAL, *pp. 495-496) of a survey of the Tydschrift voor Diergeneeskunde during the war years. Dr. Chas. H. Haasjes, Shelby, Mich., prepared the abstracts.—The Editors.]*

Pregnancy Tests in Mares.—The Cuboni test was found to be accurate within 1 to 2 per cent by H. E. Reeser [68, (June 15, 1941): 624-639], if used four months or more after service of the mare, and if readings are made under standardized quartz light rather than direct sunlight.

Comparison with the tests of Ascheim, Zondek, and Friedman are discussed.

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Copper Deficiency.—Three forms of copper deficiency encountered in Holland are described by A. M. Ferens [68, (Aug. 15, 1941): 763-768]. Affected animals in the first group lick or try to lick everything in reach, and such animals may be seen in the heath sand, muck, and peat areas. Animals showing the second form suffer from pasture diarrhea, and the black hairs around the eyes always turn gray or white. It is found most frequently in areas recently reclaimed from the Zuider Zee and newly seeded and pastured. Manifestation of the third form is less typical. There is retardation of growth and development, emaciation, dullness of the hair, and graying about the eyes. It is most common in low peat or muck areas and, under most conditions, the symptoms are not sufficiently clear cut to permit a definite diagnosis. In such instances, blood serum analyses for copper will dispel all doubt.

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Laboratory Isolations.—Some interesting bacterial isolations from specimens sent to the laboratory by practitioners are reported by Jacob Jensen [68, (Aug. 15, 1941): 784-791]: *Shigella flexneri* from *Macacus mulatus* and from orang utan; *Salmonella typhimurium* (dove type) from guinea pig and from mouse; (duck type) from parrot; *Salmonella enteritidis* var. *dublin* from cow, silver fox, and raccoon; *Clostridium welchii* in pure culture from phlegmon in stomach wall of a dog; *Clostridium edematous maligni* from a phlegmon associated with parturition in a mare, and also in conjunction with *Clostridium chauvei* in a cow; and *Clostridium novyi* associated with a phlegmon caused by trauma.

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Tuberculosis in a Calf.—J. D. Verlinde and H. E. A. van Tongeren [68, (Sept. 1, 1941): 801-803] describe a case of chronic and acute generalized tuberculosis in a calf 4 days old. They conclude that the infection must have occurred *in utero* and in two stages.

Experimental Traumatic Gastritis.—After performing a rumenotomy and establishing a rumen fistula, J. A. Beyers and J. H. Hartog produced traumatic gastritis. They report [68, (Oct. 1, 1941): 907-922] that the leucocyte count rose from an average of 7,670 on the five days preceding the injury to 10,250, 14,050, 17,980, 15,678, 12,564, and 9,873 on the six succeeding days. The wire was then removed, the leucocyte count dropped back to normal, and in one week the cow was returned to pasture.

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Liver Cirrhosis.—A sublimate titration method by which cirrhosis of the liver may be distinguished from other liver diseases is described by A. J. S. van Alphen and C. H. Neéwland [68, (Nov. 15, 1941): 975-983]. Blood serums from various species of animals have been used in checking the method, but as yet there has been no correlation between the titer obtained and the presence of recognizable pathologic changes in the body.

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Reducing Choke.—In cases of choke not reducible with a probang, H. Ten Borg has injected veratrin (100 mg. in 10 cc. alcohol). Calves 3 to 4 months old get 10 mg.; yearlings, 25 to 40 mg.; and adult cows, 40 to 50 mg. Most cases [68, (Nov. 15, 1941): 985-989] are relieved by reverse peristalsis of the esophagus, but when this does not occur within fifteen minutes the obstruction can usually be pushed into the stomach.

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Johne's Disease.—Paratuberculosis is a disease of young animals and is becoming so prevalent that an eradication program is in order, says A. J. Winkel [68, (Dec. 1, 1941): 1011-1025]. Additional information is required regarding the sources of infection, a sanitary program, and effective means of immunization. The disease spreads slowly but is dangerous because spreaders cannot be recognized during the incubation period of three, four, or five years.

Some Unusual Surgical Conditions

The following subjects are discussed in a practitioner's thesis entitled "Gleanings through Equine and Bovine Medico-Surgical Pathology" (translated) presented to, and analyzed by, *Académie Vétérinaire de France* in deciding on the award of the Cadiot prize for 1946: [1) Locking of the Patella in Horses and Cattle; (2) Several Modalities of Intestinal Obstruction; (3) Detachment of the Proximal Epi-

physis of the Tibia in Bovidae; (4) Distension of the Inferior Cubital Ligament in Bovidae; (5) Strain and Luxation of the Sacro-Iliac Articulation; (6) Strain of the Occipito-Atlantoid Articulation; (7) Intracardiac Abscess; (8) Thrombosis of the Anterior Vena Cava; and (9) Bursitis of the Lamellar Portion of the Neck Ligament; in other words, mostly undescribed conditions the author has met in his clinical work.

The thesis was acclaimed a tribute to Prof. P. J. Cadiot, distinguished surgeon, whose teachings encouraged conscientious researches of this category by clinicians.—[*M. Priouzeau: En glanant dans le pathologie médico-chirurgicale (equine et bovine). Bull. Acad. Vét. de France, 19, (July, 1946): 216-225.*]

Brucellosis

Diagnosis.—Brucellosis must be considered in the diagnosis of any obscure illness. Early diagnosis is difficult, but failure of early diagnosis in man is of less importance to his fellow man than is such failure in the animal kingdom. The undiagnosed infection in the animal is almost limitless in its potential danger to other animals, and thence to man.

There are no pathognomonic symptoms in either the acute or the chronic stages, and exclusion of other disease often is as important as any diagnostic method.

Diagnostic Measures.—A positive agglutination test is the most reliable evidence of active infection, next to culture of the organisms, but the most frequent mistake in the diagnosis of Brucella infection in man is to place reliance on a negative agglutination test. Perhaps it is as great, if not as frequent, an error in the diagnosis of the infection in animals. In chronic infection in man, the agglutination test is notoriously unreliable as a means of excluding Brucella infection. To some degree, at least, the same thing applies to cattle. Many workers have cultured the organism from the milk of persistently nonreacting cattle.

The intradermal test may be negative in 5 to 10 per cent of the cases from which positive cultures are grown. Therefore, a negative intradermal test cannot be relied on to rule out brucellosis, and even a positive test is of limited significance since it does not indicate the present status of the infection.

The opsonocytophagic test is of inestimable value as an adjunct to other tests. Rarely is it noninformative.

Culture for Brucella needs very special methods—special mediums, special aërobic conditions, and special patience. An adequate attempt to isolate the organism (including guinea pig inoculations) cannot be concluded in less than sixteen to eighteen weeks.

Problems of Treatment.—There is no specific treatment applicable to all Brucella infections, but treatment is successful in bringing about recovery or appreciable improvement, if not a permanent cure in a large percentage of patients. Reports on cures after six months or less of observation, so frequently seen in the literature, are often responsible for the perpetuation of many useless ideas about treatment.

Fever therapy has not given favorable results among my patients, nor is it evident that the reports of its successful use in a high percentage of cases have included observation for long enough periods to judge its actual value.

The chronic and acute illness should be considered separately in assessing methods of treatment, even though the phases and the methods may overlap.

The acute attack almost always can be terminated by the application of the method that fits the particular need, but one must be less optimistic regarding those whose occupation involves repeated and massive exposure. They may be immunized by repeated subclinical infections, or they may be rendered so hyperallergic (along with continued or recurrent infections) that treatment is greatly complicated.

Allergy undoubtedly plays a rôle in the diagnosis and symptomatology of brucellosis but is often overemphasized. Perhaps the hypothesis that a patient with a high phagocytic index is "immune" is partly responsible for the persistence of this emphasis on allergic states. If a person is immune he can neither relapse nor be reinfected nor be actively ill with an infectious process. Patients can be actively infected even in the presence of a phagocytic index of 100 (*i.e.* all cells showing definite phagocytic response).

Probably the greatest single obstacle to complete eradication of the organism, and the cure of infection, is its tendency to live on in foci difficult to reach surgically or with drugs. The spleen of the guinea pig is usually infected in experimentally inoculated animals. The guinea pig readily can be cured of the bacteremia by the administration of streptomycin, but the spleen remains infected and bacteremia recurs. So it seems to be in human infection.

Evaluation of Treatment Procedures.—In my experience, penicillin gives no promise of curative or even palliative effect in acute or chronic brucellosis. Favorable effects *in vitro* were not confirmed *in vivo*.

Streptomycin apparently is effective in terminating the acute illness with resultant negative cultures, but a relapse usually follows.

Use of the sulfonamides is unlikely to result in cure of the acute or chronic illness. The patient may be tided over the acute phase with various sulfonamide compounds, and occasionally they may be effective in the chronic illness, especially in the presence of involvement of the joints. Their greatest usefulness appears

to be in terminating the acute illness. At this point, unless the patient has acquired satisfactory phagocytic activity of the white cells, vaccine therapy becomes of vital importance to prevent relapse.

The persistence of fatigue, moderate to severe secondary anemia, and pains in the joints and muscles are perhaps the most common of the symptoms and observations that should lead one to suspect that the cure has not been accomplished.

The purpose of chemotherapy is to induce a protective level of opsonic activity before the bacteriostatic effect of the sulfonamides has been lost. The same principle is applicable to patients treated with streptomycin.

Brucellin, a filtrate of the three strains of Brucella, has been recommended by Huddleson in both the acute and the chronic illness. He states that the filtrate affects the course of the disease by producing a systemic allergic reaction which, in turn, is accompanied by a neutrophilic leucocytosis and an increase in the immune opsonins. It is essential to maintain a state of sensitization throughout treatment. Severe systemic, febrile reactions are induced by this product, and no less a period than from three to five years is essential to evaluate the result of treatment.

Antiserum has proved effective in terminating the acute illness in an impressive percentage of cases of less than four months' duration. A polyvalent antiserum was made commercially but has not been available for several years.

Transfusions of immune blood have shown varying degrees of success. In a recent acute illness, 500 cc. of citrated whole blood was given from a patient whose phagocytic index has remained at a high level for more than two years following apparent recovery from chronic brucellosis. There was prompt improvement in the patient and a significant rise in the phagocytic power of her white cells within three days.

Vaccine therapy seldom can be used successfully in the acute illness because of undesirable febrile and focal reactions. Occasionally, a very dilute vaccine can be used. A vaccine of heat-killed *Brucella abortus* has been the most effective means of treatment for the chronic illness in my experience. Mixed strains often cause unnecessarily severe and undesirable reactions.

Conclusions.—Summarizing the data presented, the following conclusions may be drawn:

The diagnosis of brucellosis is an involved procedure requiring the painstaking application of all available tests—blood agglutination reaction, cutaneous reaction, opsonocytophagic test, and culture of the organism. Only a positive culture is definitive, but a combination of the other three tests will usually allow accurate diagnosis.

The treatment of brucellosis is likely to be a tedious, arduous task for both the physician and the patient but is usually successful in bringing about recovery if not permanent cure.

Streptomycin, in the light of present knowledge, cannot be considered a cure for the acute or the chronic illness.

Brucella abortus vaccine furnishes an effective means of treatment of the uncomplicated chronic infection.—[*H. J. Harris, M.D.: Brucellosis J. Am. M. A., 131, (Aug. 31, 1946): 1484.*]

Leptospirosis in Cattle

A febrile disease was found in cattle in west Texas, and the condition was characterized by hemoglobinuria, diarrhea, anemia, and abortion. Leptospira were demonstrated in the kidneys and livers of less than 30 per cent of cases, and in the fetal membranes of only one, although the pathologic findings were similar to those of leptospirosis in dogs with a few noticeable differences.

The disease was reproduced in experimental cattle by the injection of blood collected during the febrile stage of the disease, but serum of recovered animals failed to agglutinate either *Leptospira canicola* or *Leptospira icterohemorrhagiae.* The etiology was not determined and the importance of Leptospira as the sole cause was questioned, but the administration of sulfanilamide during the febrile stage appeared to have a beneficial effect.—[*F. P. Mathews: A Contagious Disease of Cattle Associated with Leptospira. Am. J. Vet. Res., 7, (April, 1946), (Part I):78-93.*]

Abdominal Hernia in Horses

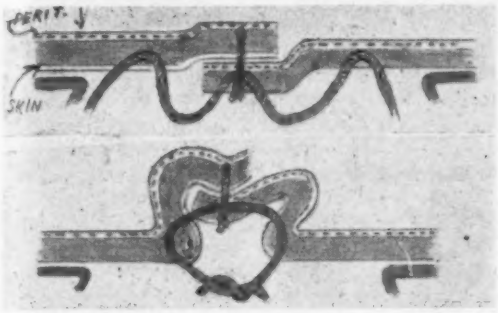
The type of hernia most frequently encountered in army horses occurred in an area of the abdominal wall which the author proposes to designate the trigonum aponeurosi abdomini. This is bounded medially by the lateral border of the rectus abdominis, antero-laterally by the musculo-aponeurotic junctions of the transversus abdominis and external oblique, and postero-laterally by the musculo-aponeurotic junction of the internal oblique. At this point, the fibers of the aponeuroses of the oblique muscles and the fibers of the abdominal tunic are more nearly parallel than elsewhere in the abdominal wall. A traumatic defect can occur in these layers by lateral separation of the fibers. The perpendicular fibers of the transversus and fascia transversalis rupture at the lateral border of the rectus.

The anterior angle of the trigonum is located by finding the lateral border of the rectus at the point where it crosses the twelfth costal cartilage, and the intersection of this border with a line from the umbilicus to the seventeenth costo-chondral junction.

Preoperatively, the whole body was cleansed, and a large operative field prepared. The animal was not fed roughage for one to two days,

but was given the normal ration of concentrates. Two enemas were administered with a two-hour interval on the night before operation.

Narcosis was obtained with a 10.0 per cent solution of chloral hydrate, and 0.5 to 1.0 per



cent solution of novocain was used locally. The horse was fixed in dorsal recumbency and the field isolated with sterile sheets held by Backhaus clamps.

The hernial sac was dissected toward the abdominal wall until the contents could be seen and gently replaced in the abdomen. At this point, 20 to 30 cc. of sterile liquid petrolatum was introduced into the peritoneal cavity.

Closure was effected by a "buried, retroperitoneal, visible knot suture" of silk. The first row of sutures was placed to cause the hernial margins to overlap and the second row to invert the first. The sutures were placed 3 to 4 cm. from the margins. Before tying the second row of sutures, a 5 per cent aqueous solution of iodine was applied to the surface of the closure.

The inside of the hernial sac was also treated with 5 per cent iodine and the cavity eliminated by suturing, if possible. If any cavity of the hernial sac remained, it was left open, and a drain inserted.

The author considers it important to make incisions in the postoperative swellings of the abdominal wall to prevent separation, cavitation, and infection. These incisions were 5 to 6 cm. long, three to eight in number, and located with care to avoid the external thoracic vein.

Of six animals operated, none of the sutures failed to hold. No bandage was applied. The animals were tied in the stall with their heads over the manger to prevent lying down. Exercise was begun the next day, and roughage added gradually to the ration after two to three days. Water was not restricted.—[*A. E. Kolos: Abdominal Hernia in Horses. Veterinariya (Russian) No. 5, (1946): 25.*]

ROBERT E. HABEL

Corynebacterium Pyogenes Survival

Corynebacterium pyogenes remained alive for at least nineteen days in milk from a case of summer mastitis, when the milk was held at room temperature. Although readily killed by heat at 80 C., the coagulation of casein at this temperature may assist survival of the organisms present.

Of a group of disinfectants, only iodine and lysol exerted any appreciable effect on the life and multiplication of the organisms contained in pus in the discharges from the udder and uterus. Among the ineffective group of disinfectants tested were acriflavine, metholyl, dettol, crystal violet, and Milton.

Attention is called to the danger of survival of the infection on catheters used to treat cases of *C. pyogenes* metritis and on teat tubes used to drain quarters affected with summer mastitis, since instruments contaminated with the organism are hard to sterilize.—[*R. W. Roach: The Survival of Corynebacterium pyogenes in Discharges from the Udder and Uterus of the Cow. Vet. Rec., 58, (April 18, 1936): 169.*]

Leucemia in Dogs

Among 512 dogs examined *post mortem* during a two-year period, the incidence of leucemia (malignant lymphoma) was 1.8 per cent. Of 44 cases observed over an extended period, only two occurred in dogs under 3 years of age, the highest incidence being in those between 4 and 8 years old. Although 21 breeds were represented in the series of 44 cases, 10 were in Aberdeen terriers. Interestingly, American workers (Bloom and Meyer, *Am. J. Path.*, 21, (1945): 683-715) also observed a relatively high incidence of the disease in this breed.

The clinical history was enlargement of the lymph nodes of the throat and neck for one to four weeks before admission. Within nine weeks after admission, all of the animals either died or were destroyed *in extremis*. Attempts to treat a few cases with urethane were unsuccessful.—[*E. G. White: Leukaemia in the Dog. Proc. Roy. Soc. Med., 39 (11), (Sept., 1946): 739.*]

BOOKS AND REPORTS

Livestock Insect Control

A praiseworthy booklet, 8 x 11, with elegant illustrations reveals the seriousness of insects to livestock in a grazing country. The work described was conducted in Kansas, the extension service of Kansas State College and the U. S. Department of Agriculture coöperating. Few realize the care and the skill required to safeguard stock against insect parasites. Although admitted that there is still room for improvement, thanks to scientific research Kansas was able to develop a well-organized veterinary service. The tick vector of bovine piroplasmosis which once caused heavy losses is out of the way but there still remain grubs, lice, biting flies, horn flies, horse flies, stable and house flies, and others to annoy cattlemen, dairymen, and general farmers to the tune of millions of dollars when and where control measures are not employed. Kansas having been chosen as a suitable place for critical demonstrations on

the use of DDT on a large and practical scale, the author was able to set down definite information on methods and results. Two tables condense the results obtained against the horn-fly pest and show that DDT is not just another insecticide.—[*Livestock Insect Control in Kansas. Prepared by Dr. E. G. Kelly, Extension Entomologist, Kansas State College. 26 pages. 1946.*]

Preventive Medicine and Public Health

The author has drawn a distinction between preventive medicine, which he considers to be a function of the individual in the promotion of personal and family health, and public health, which he believes to be a community function.

The book consists of six sections and is divided into 47 chapters. Each item discussed is highlighted by an illustrative case record. The chapters of most interest to veterinarians deal with food inspection, sanitation of milk, milk as a transmitter of disease, and disease transmitted through food other than milk and milk products (food poisoning).

Emphasis is placed on what the doctor can do to protect personal and family health among his patients. The text was prepared for physicians and students, people who are primarily interested in the diagnosis and treatment of disease. It holds that the physician in practice has an obligation to his patient and to his community—to prevent illness and to promote family and community health.

In the discussion of brucellosis, the author states that "The bovine type of undulant fever is much more common than epidemiologic reports indicate, for the disease is frequently undiagnosed. Infection occurs almost always through the consumption of raw milk." This latter statement is not substantiated here, and does not agree with the figures quoted by others. Most reports previously issued have indicated that *Brucella abortus* is not readily spread by milk, but is spread by contact with infected animals; while *Brucella suis* and *Brucella melitensis* are often milk-borne infections. We believe that if the author is speaking of the undiagnosed types of undulant fever he is not justified in drawing conclusions as to the type of Brucella organisms which may be present.—[*Preventive Medicine and Public Health. Wilson G. Smillie, M. D. Cloth. 607 pages. MacMillan Co., New York, 1946. Price $6.00.*]

Glycerin

Few chemicals serve the chemist and the manufacturer in so many and in such varied ways as glycerin. This practical treatise will provide research chemists, manufacturers, plant operators, industrial workers, and students with comprehensive data in a clear and simple style. It enumerates 1,583 uses for glycerin, of which 49 apply to veterinary medicine. There is also a bibliography of 21 titles in veterinary medicine.—[*Glycerin, Its Industrial and Commercial Applications. Compiled and edited by Georgia Leffingwell, Ph. D., and M. A. Lesser, B. Sc. Cloth. 259 pages. Chemical Publishing Co., Brooklyn, N. Y., 1945. Price $5.00.*]

Australia—Resources and Development

While Japan was developing with premeditated malice, Australia was carrying out a program more healthful to the world, is the general theme of a book outlining agriculture, animal industry, mineral, and timber resources, and manufacturing of that island continent on the other side of the equator, which the war brought closer to the United States than was ever dreamed of before. Australia faces difficult problems: aridity, impoverished soil, limited mineral deposits, and distance. Its amazing growth in the last fifty years is the marvel of this period—a credit to an ambitious population who did not desert science in any of its pursuits. The author points to the improvements in cattle and sheep by scientific breeding practices. As its contributions to veterinary science practiced on a large scale have been sought feverishly in this country, one can appreciate the value of this book to those who wish to know Australia.—[*Australia, Its Resources and Development. By G. L. Wood. Illustrated photographs, maps, and charts. The Macmillan Company, New York. Price $3.50.*]

The Ring-Neck Pheasant

A book entitled "The Ring-Neck Pheasant and Its Management in North America" illustrated with maps and plates tells the story of the ring-neck in various states and regions of North America, its three species, and twenty-nine subspecies, its history, classification, and distribution by local authors, its relations to the various environments, its eating habits, and directions for its preservation in refuges and free range. An extensive bibliography completes a scholarly treatment of the subject.—[*The Ring-neck Pheasant and Its Management in North America. American Wildlife Institute, Washington, D. C. 320 pages. 1945. Price $3.50.*]

Soap in Industry

Information has been collected on the uses of soap in industry and has been compiled into a book of 23 chapters. Each chapter deals with a single phase of industry, outlines the uses of soap, and presents formulas for such uses.

Of interest to veterinarians are the chapters on animal husbandry, insecticides, and milk production. A concise report of some uses for soap will be of value to the veterinarian who likes to compound a number of his own remedies.—[*Soap in Industry. Compiled and edited by Georgia Leffingwell and Milton Lesser. Cloth. 204 pages. Many formulas. Chemical Publishing Co., Brooklyn, N. Y. Price $4.00.*]

THE NEWS

Facts About the AVMA Research Fund

1) What is the AVMA Research Fund?

It is a sum of money being raised by the Special Committee on Financing Research of the American Veterinary Medical Association.

2) Why was it established?

To advance knowledge by research in both the basic and the applied aspects of veterinary science. This will be accomplished by affording financial support in the form of fellowships to promising veterinarians who wish to go into graduate work and eventually into teaching and research.

3) How is the money being raised?

By voluntary contributions from members of the veterinary profession.

4) After the initial drive for funds is over, how will this fund be continued?

A number of veterinarians have reported that clients and other acquaintances have expressed interest in furthering veterinary research. It is believed, therefore, that no difficulty should be encountered in maintaining reserves derived from the contributions made by friends of the veterinary profession who appreciate the importance of its functions.

5) Who will direct the use of this money?

The Research Council of the AVMA. This Council is composed of a large number of veterinarians representing all phases of veterinary medicine. Following is a list of the members of the Council and the fields which they represent.

Anatomy and Histology.—L. E. St. Clair, Professor of Veterinary Anatomy, College of Veterinary Medicine, University of Illinois, Urbana.

Bacteriology (Immunology and Biologic Therapy).—Edward Records, Research Professor of Veterinary Science, University of Nevada, Reno.

Biochemistry and Animal Nutrition.—George H. Hart, Head, Division of Animal Husbandry, University of California, Davis.

Large Animal Medicine.—James Farquharson, Professor of Surgery and Clinics, Division of Veterinary Medicine, Colorado A. & M. College, Fort Collins.

Large Animal Surgery.—W. F. Guard, Professor of Surgery and Obstetrics, College of Veterinary Medicine, The Ohio State University, Columbus.

Parasitology.—E. W. Price, Assistant Chief, Zoölogical Division, Bureau of Animal Industry, Beltsville Research Center, Beltsville, Md.

Pathology.—E. T. Hallman (Chairman, Research Council), Professor of Pathology, School of Veterinary Medicine, Michigan State College, East Lansing.

Physiology and Pharmacology.—H. H. Dukes (Secretary, Research Council), Professor of Veterinary Physiology, New York State Veterinary College, Cornell University, Ithaca.

Poultry Pathology.—C. A. Brandly, Department of Veterinary Science, University of Wisconsin, Madison.

Small Animal Medicine.—C. P. Zepp, Practitioner, 136 W. 53rd St., New York City.

Small Animal Surgery.—C. F. Schlotthauer, Associate Professor, Division of Experimental Medicine, Mayo Foundation, Rochester, Minn.

Veterinary Hygiene.—A. L. MacNabb, Principal, Ontario Veterinary College, Guelph, Ont.

Virus Diseases.—R. A. Kelser (Vice-Chairman, Research Council), Dean, School of Veterinary Medicine, University of Pennsylvania, Philadelphia.

X-Ray.—M. A. Emmerson, Professor of Veterinary Obstetrics, Division of Veterinary Medicine, Iowa State College, Ames.

Member-at-Large.—Hadleigh Marsh, Agricultural Experiment Station, Bozeman, Mont.

6) Specifically how is the fund to be used?

To afford stipends in the form of fellowships to promising veterinarians who wish to pursue graduate work.

7) Who may apply for fellowships?

Veterinarians who are citizens of the United States or Canada may apply.

8) How would one apply?

By obtaining application forms, filling them out, and filing them with the Council. Forms should be obtained from, and returned to, Dr. H. H. Dukes, Secretary, AVMA Research Council, New York State Veterinary College, Cornell University, Ithaca, N. Y.

9) How much financial assistance may be obtained through a fellowship?

The stipend of the fellowships will be determined by the needs of the individual fellows, the location of the schools at which they propose to work, and other factors and will range from $150 per month upward.

10) What length of training is available under this plan?

Fellowships are awarded for one academic year or, if the fellow wishes to pursue graduate work in the summer also, for one calendar year. Fellows who do well in their graduate work may expect, upon application to the Council, to be reappointed to fellowships yearly until their graduate training is complete.

11) In what institutions is such training available?

The fellow may pursue work at any institution which offers graduate work in the field of

his interest, provided that he can be admitted to the school and that the school is acceptable to the Council. It is not essential that the work be done in a veterinary school. Medical schools, colleges of agriculture, and other institutions are possibilities.

12) May the man receiving the fellowship choose his problem?

Yes, to a very large extent. The fellow and the professor who is to direct his research will usually determine the nature of the problem. The Research Council is prepared to offer suggestions and advice in this connection.

13) What species of animals are to be included in research projects?

Any species may be included in a research project. The particular interest of the fellow is an important factor here.

14) What are some of the projects suggested for study?

The secretary of the Research Council has on file a large number of research projects obtained from members of the Research Council and other sources. Following are a few examples of suggested research projects.

1) Hypoglycemia in swine.
2) Changes in the uterus of mare, cow, sow, and bitch during gestation.
3) The value of penicillin in anaërobic infections.
4) The therapeutic value of antibiotics in puerperal sepsis in mares and cows.
5) A study of the fungi associated with dermatitis in the dog.
6) A study of anesthetics and their action in animals.
7) A study of the blood constituents of animals as a clinical aid in diagnosing nutritional and deficiency diseases.
8) Studies on the enteritis complex of swine.
9) Studies of Newcastle disease and other respiratory diseases of fowls.
10) The bovine shipping fever complex.
11) A study of arthritis in the horse.
12) The relationship of vitamin A deficiency to sterility in bulls and cows.
13) A study of absorption from the gastrointestinal tract of ruminants.
14) The physiology of the stomach of the newborn calf.
15) The canine encephalitis syndrome.
16) Basic studies of endocrine therapy in infertility in animals.

15) Who approves fellowships and projects?

The Committee on Fellowships of the Research Council. This Committee is composed of six members, including the chairman and the secretary of the Council.

16) Will the money obtained from the fund on a fellowship have to be paid back?

No.

17) How will this work profit practitioners who, with comparatively rare exceptions, will not choose to do graduate work?

Research problems undertaken by veterinary research fellows may be either basic or applied. Actually, there is less difference between basic and applied research than is commonly thought. Either, when properly done, holds the possibility of yielding results that will be useful to the practitioner in his everyday work in the treatment and prevention of diseases of animals. It is expected that a number of the fellows will, upon completion of their graduate training, return to the accredited veterinary colleges, and research institutes, thus strengthening the whole fabric of veterinary medicine. In this way, all members of the profession will benefit from this work.

Veterinary Research Fellowships Available

The Research Council of the American Veterinary Medical Association announces that a number of veterinary research fellowships are available for the academic year 1947-48.

Holders of fellowships must be veterinarians and citizens of the United States or Canada. Veterinary students who expect to graduate at the end of the current school year may apply for fellowships for the following year. The last date for filing applications for the year 1947-48 is March 1, 1947.

The Committee on Fellowships of the Research Council will meet early in April to consider applications and to award fellowships. Applicants will be notified of the action regarding their applications not later than May 15,—in most cases earlier.

The stipend of the fellowships will be determined by the needs of the individual fellows, the location of the schools at which they propose to work, and other factors; they will range from $150 per month upward.

For information concerning the fellowship project of the Research Council, see the February, 1946, JOURNAL, p. 107.

For application blanks and other information write:

Dr. H. H. Dukes, Secretary
A.V.M.A. Research Council
N. Y. State Veterinary College
Cornell University
Ithaca, New York.

Fifth Report on Contributions to AVMA Research Fund

Geographical Breakdown as of Dec. 10, 1946

State	Total Number Veterinarians (1945 figures)	Quota*	Number of Contributions (to date)	Total Amount Contributed (to date)	Per Cent of Quota (to date)
Alabama	125	$ 1,250	31	$ 470.00	37.6
Arizona	42	420	11	145.00	34.5
Arkansas	59	590	12	116.17	19.1
California	1,044	10,440	337	6,378.00	60.9
Colorado	177	**1,770**	**93**	**2,160.00**	**122.0**
Connecticut	136	1,360	47	853.00	62.7
Delaware	32	320	5	50.00	15.6
District of Columbia	**58**	**580**	**32**	**812.00**	**140.0**
Florida	142	1,420	55	1,210.00	85.2
Georgia	147	1,470	40	620.00	42.2
Idaho	71	710	31	370.00	52.1
Illinois	1,224	12,240	186	4,034.30	33.0
Indiana	585	5,850	69	952.00	16.3
Iowa	865	8,650	159	2,547.31	29.4
Kansas	404	4,040	82	1,870.00	46.3
Kentucky	137	1,370	26	287.00	21.0
Louisiana	85	850	15	270.00	31.7
Maine	68	680	26	640.00	94.1
Maryland	165	1,650	50	970.00	58.8
Massachusetts	**206**	**2,060**	**77**	**2,375.00**	**115.3**
Michigan	550	5,500	116	2,155.00	39.2
Minnesota	403	4,030	99	1,364.50	33.8
Mississippi	99	990	10	165.00	16.6
Missouri	**356**	**3,560**	**165**	**3,595.00**	**109.8**
Montana	63	630	26	255.00	40.5
Nebraska	281	2,810	75	1,323.75	47.1
Nevada	27	270	6	95.00	35.2
New Hampshire	35	350	12	150.00	42.8
New Jersey	301	3,010	74	1,240.50	41.2
New Mexico	**29**	**290**	**14**	**352.50**	**121.5**
New York	980	9,800	309	6,296.00	64.2
North Carolina	135	1,350	46	605.00	44.8
North Dakota	73	730	14	285.00	39.0
Ohio	740	7,400	199	3,321.00	44.9
Oklahoma	110	1,100	57	775.00	70.5
Oregon	175	1,750	49	865.00	49.4
Pennsylvania	656	6,560	133	2,696.50	41.1
Rhode Island	**25**	**250**	**16**	**715.00**	**286.0**
South Carolina	80	800	13	245.00	30.6
South Dakota	118	1,180	22	346.00	29.3
Tennessee	93	930	29	387.50	41.7
Texas	421	4,210	91	1,222.75	29.0
Utah	45	450	27	290.00	64.4
Vermont	96	960	33	610.00	63.5
Virginia	130	1,300	50	780.00	60.0
Washington	226	2,260	68	1,026.00	45.4
West Virginia	65	650	9	105.00	16.1
Wisconsin	502	5,020	96	1,610.00	32.1
Wyoming	38	380	22	250.00	66.0
Hawaii	**16**	**160**	**16**	**410.00**	**256.3**
Canada	...	....	9	115.25	...
Totals	12,640	$126,400	3,289	$60,782.03	48.1*

*Based on an average contribution of $10.00 per veterinarian. However, the total amount contributed to date is 60.7 per cent of the original goal of $100,000.

States in bold face have exceeded their quota.

Research Fund Report

The fifth bimonthly report, as of Dec. 10, 1946, of contributions to the AVMA Research Fund appears on another page in this section. Since the last report (*see* the November JOURNAL, pp. 381-383), the veterinarians of Missouri and New Mexico have made donations to the extent that their states are now in the select group which have exceeded their quotas and are distinguished in boldface listings in the table (*see* p. 47.)

Although contributions now total over $60,000, or better than 60 per cent of the original goal of $100,000, this has been accomplished by only about 30 per cent of the veterinarians who might be expected to support such a worthwhile project. The donations from individual veterinarians in the United States are still only 48 per cent of the total amount which would be realized in this campaign.

The Special Committee on Financing Research (Drs. J. V. Lacroix, *chairman*, W. A. Hagan, and C. C. Hastings) anticipates that the campaigns in the states which have not completed their quotas will be concluded during the next two or three months.

ADDITIONAL FELLOWSHIP APPROVED

Since the November report, the Committee on Fellowships of the Research Council has completed a fellowship arrangement with the University of Minnesota, and Dr. Dean S. Folse has been appointed to conduct investigations on protozoan diseases of turkeys with special emphasis on coccidiosis. This work will be done in the Division of Veterinary Medicine at the University. Dr. Folse received his veterinary degree in 1943 and his bachelor's degree in 1945, both from Texas A. and M. College. This is the third fellowship activated since the Research Fund drive was started.

Governing Boards Meet

The Board of Governors met in Chicago on Nov. 30, 1946, to discuss routine business matters which had arisen since its meeting of October 5.

The Executive Board met on Dec. 1, 1946, to receive the report of the preceding day's work and to consider additional items of interest to all members of the larger group.

The Executive Board listened to reports of progress in the preparations for the eighty-fourth annual meeting to be held at Cincinnati during the week of August 18. The local group from that area has nominated Dr. A. G. Madden, Jr., Madeira, as general chairman, and has also selected men to act as chairmen of the several necessary committees.

A so-called "Uniform Veterinary Medicine Bill" was studied. A committee of the Board, consisting of Drs. S. F. Scheidy, *chairman*, J. L. Axby, and W. G. Brock, conferred with Mr. A. J. Barta, counsel for the National Drug Trade Conference and author of the bill. It was proposed that the name of the bill be changed to "Uniform Animal Remedies Bill", and that other alterations be made in its several provisions. A revised copy, to be prepared, will be available in any state where legislation of this type is contemplated.

The Board reviewed correspondence regarding several magazine articles which have appeared during recent months, and laid plans for accumulating and releasing factual information regarding the relationship which exists between the veterinary profession, the health of farm livestock, and the food supply of the American family. This information will be used in the regular channels of the public relations program, and also will be available for prompt release to meet specific needs.

AVMA CLIPSHEET

The Board authorized development of a clipsheet as a substitute for the lay journal which had been under consideration for some time. A study of the problem was ordered by the Board a year ago, and it is believed that the clipsheet, considering the comparative costs, will bring more satisfactory results. The clipsheet, *AVMA Animal Health Topics*, will contain material of interest to all consumers of foods of animal origin and other items of particular interest to livestock owners. It will be mailed to about 5,000 country weekly papers whose circulation is chiefly among rural subscribers and businessmen dependent upon the prosperity of breeders and feeders of farm livestock. The first issue will appear this month, and it is anticipated that AVMA members will receive sample copies at a later date.

Special Committee on Rabies Appointed

President B. T. Simms has appointed the following special committee in addition to those listed in the Official Roster for 1946-47 (the JOURNAL, November, 1946, pp. 413-418).

SPECIAL COMMITTEE ON RABIES

R. A. Kelser, *Chairman*, School of Veterinary Medicine, University of Pennsylvania, 39th St. & Woodland Ave., Philadelphia, Pa.

C. W. Bower, 3119 Stafford St., Topeka, Kan.

Glen L. Dunlap, 800 Woodswether Rd., Kansas City 6, Mo.

Chas. A. Mitchell, Animal Diseases Research Institute, Hull, Quebec.

Guy J. Phelps, 108 N. Laurence St., Montgomery, Ala.

H. W. Schoening, Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

Alexander Zeissig, New York State Veterinary College, Cornell University, Ithaca, N. Y.

C. P. Zepp, Sr., 136 W. 53rd St., New York, N. Y.

A special committee on small animal dis-

eases also is being selected, the personnel of which is expected to be announced next month.

Mr. J. J. Shaffer Returns to AVMA Staff

Leaving the editorial department of the AVMA in June, 1942, to enter military service, Mr. J. J. Shaffer has returned recently to the AVMA staff. Since his return, he has been working on the public relations program, with special emphasis on the accumulation and preparation of newsworthy material and the clipsheet, *AVMA Animal Health Topics*.

Entering the Army as a private, Mr. Shaffer received basic training at Camp Grant, Illinois, and then applied for officer candidate schooling which he completed successfully at Camp Barkeley, Texas, being commissioned as first lieutenant in the Medical Administration Corps in January, 1943. He was promoted to the grade of captain in March, 1945. During his service in the States, Captain Shaffer saw duty with medical units in Colorado and Texas. He then served for twenty-six months in Australia, New Guinea, and the Philippines.

Returning to the States late in 1945, Captain Shaffer was stationed at the Surgeon General's Office, Washington, D. C., during the major part of 1946, where he helped to write the veterinary history of the war. Upon completion of this work, Surgeon General Norman T. Kirk awarded him the Army Commendation Ribbon for his exceptional services to the Medical Department and his "outstanding contribution as Assistant to Chief, Historical Division, from 23 January 1946 to 4 October 1946."

Special Election in Executive Board District IX

Following the election of Dr. W. A. Hagan as president-elect at the Boston session, a special election became necessary in District IX to fill the unexpired part of the term on the Executive Board to which Dr. Hagan was named in 1942, and which runs until the conclusion of the annual meeting in August, 1947. As a result of the primary balloting carried out in this district (New York and the New England states), the names of the following candidates appeared on ballots mailed to members in the district early in December:

Dr. A. G. Danks, Ithaca, N. Y.
Dr. M. G. Fincher, Ithaca, N. Y.
Dr. B. S. Killian, Somerville, Mass.
Dr. Edwin Laitinen, West Hartford, Conn.
Dr. C. P. Zepp, Sr., New York, N. Y.

The election polls will close on Feb. 6, 1947. A regular election will be held in this same district, also in District I (Canada), beginning in the spring of 1947 for the purpose of selecting Executive Board members for full, five-year terms.

Program Contributions for Cincinnati Meeting Invited

Work is being initiated on the program for the eighty-fourth annual meeting, which will be held in Cincinnati during the week of Aug. 18, 1947. The chairmen and secretaries of the several sections are assembling suitable material from which to arrange a well-balanced program.

Members and others who have papers they wish to present at the Cincinnati session are invited to communicate with the AVMA office or with the appropriate section officers (see Roster, November JOURNAL, p. 413). In so doing, state the subject to be discussed and enough additional information to permit consideration of the suitability of the paper for the program.

The deadline for the tentative program of each section is March 15, 1947. Therefore, prospective contributors should write the section officers or the AVMA office before that date.

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

ALVAREZ, JOSE GONZALEZ
Utah State Agricultural College, Veterinary Science Dept., Logan, Utah.
D.V.M., Universidad Nacional of Colombia, S. A., 1946.
Vouchers: J. E. Rasmussen and A. G. Larsen.

ARDELL, J. W.
Newark Valley, N. Y.
D.V.M., Cornell University, 1916.
Vouchers: C. L. Kern and C. P. Zepp.

BERNARD, BYRON W.
644 E. McMillan, Cincinnati, Ohio.
V.M.D., University of Montreal, 1944.
Vouchers: J. L. Jones and S. G. Stephan.

CARMACK, RALPH W.
40 W. 36th, Indianapolis, Ind.
V.S., Ontario Veterinary College, 1905.
Vouchers: E. M. Lynn and F. Booth.

CHASE, CHARLES M.
3264 Utica St., Denver, Colo.
D.V.M., Colorado A. & M. College, 1919.
Vouchers: J. W. Hovorka and E. M. Walker.

DOWLING, EDMUND M.
357 Columbus Ave., Springfield, Mass.
D.V.M., U. S. College of Veterinary Surgeons, 1918.
Vouchers: L. A. Paquin and F. M. Austin.

FOOSE, CLARENCE N. JR.
P. O. Box 487, Cumberland, Md.
V.M.D., University of Pennsylvania, 1946.
Vouchers: T. E. Booth and J. D. Beck.

MOORE, CHARLES A.
15795 Mack Ave., Detroit, Mich.
B.V.Sc., Ontario Veterinary College, 1934.
Vouchers: H. W. Cain and C. M. Hamilton.

NAUGHTON, JOHN J.
1623 Clay Ave., Scranton, Pa.
B.V.Sc., Ontario Veterinary College, 1913.
Vouchers: C. L. Kern and C. P. Zepp.

PLEUGER, CARL A.
2146 Freeman Ave., Cincinnati 14, Ohio.
D.V.M., Ohio State University, 1922.
Vouchers: J. L. Jones and A. G. Madden, Jr.

POLAK, MARVIN P.
Box 1101, Riverdale, Calif.
V.M.D., University of Pennsylvania, 1945.
Vouchers: E. R. Braun and D. E. Barr.

SMOKLER, DAVID G.
Rt. No. 2, Dallas, Texas.
D.V.M., Texas A. & M. College, 1946.
Vouchers: R. D. Turk and J. H. Milliff.

STRANG, GEORGE J.
50 Brown St., Lewisburg, Pa.
D.V.M., Cornell University, 1931.
Vouchers: C. L. Kern and C. P. Zepp.

TALAVERA, JUAN
Calle Iturbe 14, Madrid, Spain.
D.V.M., Veterinary Faculty, University of Madrid.
Vouchers: A. Malaga A. and M. S. Shahan.

WILCOX, ADELBERT E.
2105 S. 50th St., Lincoln 6, Neb.
D.V.M., St. Joseph Veterinary College, 1923.
Vouchers: R. E. Willie and E. H. Hageman.

Second Listing

Elliott, James A., 286 Forest Ave., Bangor, Maine.

Frank, Charles B., Mount Joy, Pa.

Hauck, Allen J., 1940 Compton Rd., Cincinnati 31, Ohio.

Henshaw, Russell J., Box 1638 Delray Beach, Fla.

Hollister, Bryce E., Box 248, Watts Hill Rd., Honesdale, Pa.

Jackson, Wesley E., Moline, Mich.

Larson, Will, 207 Livestock Exchange Bldg., Ft. Worth 6, Texas.

Sadler, Walter W., 695 S. Fourth St., Beaumont, Texas.

Seelig, Hildegard L., 1 Merrimon Pl., Asheville, N. Car.

Westbrook, J. T., Box 117, Hebbronville, Texas.

Wharton, Arthur E., 215 Isabel St., San Antonio, Texas.

Williams, Coy L., DeFuniak Springs, Fla.

Colorado A. & M. College

Smith, Arthur R., D.V.M., 215 W. Second St., Delta, Colo.

U. S. GOVERNMENT

Serum-Virus Agreement Revised.—A new agreement affecting the sale and distribution of hog-cholera antiserum and virus was entered into the Federal Register Oct. 7, 1946. The revision (amendment) provides for discontinuing the special classification for "volume contract purchasers," meaning persons, agencies, farm bureaus, etc., who buy these products in large quantities. The proponents of the change contended that the former classification impairs the equitable functioning of the marketing agreement by giving such buyers undue advantage in the posting of prices. They are to be classified with those who buy serum and virus for resale and not for personal use.

• • •

New Vaccine.—A single Swiss plant is the world's only source of a strikingly effective foot-and-mouth disease vaccine developed by the Germans late in the war. Dr. W. M. Swangard, who returned recently from a five-month investigation in Germany for the Office of Technical Services, Department of Commerce, said that the vaccine has been an important factor in the European struggle against famine, for it is reported to have saved incalculable numbers of cattle in Belgium, Holland, and other countries. Developed by a German virologist in 1943, the war prevented its commercialization in Germany, but it is made on a large scale by the Swiss Vaccine Institute at Basel, Switzerland.

Dr. Swangard also praised the coöperation of American army authorities in Germany. All possible facilities for their work and comfort are being placed at the disposal of American investigators.

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Disinfection Procedures for Poultry Service Personnel.—The Bureau of Animal Industry, USDA, has issued an outline of precautions for poultry service workers and persons going from one unit or farm to another who are often serious spreaders of poultry diseases. Visitors without essential business should not be allowed on ranges, in houses, or yards where poultry is kept. All necessary service personnel, such as blood testers, chick sexers, cullers, flock inspectors, vaccinators, buyers, feed deliverers, manure haulers, etc., should observe every practicable precaution against conveying infection from one premises to another on their persons or equipment.

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USDA Lifts Mexican Cattle Quarantine.—The U. S. Department of Agriculture announced that the border quarantine against Mexican cattle was lifted, effective 12:01 a.m., October 18. A joint Mexican-United States veterinary survey had just been completed of Mexican herds of cattle to which zebu bulls from Brazil were added during the past year and had failed to uncover any signs of foot-and-mouth disease in Mexico.

Two importations amounting to over 450 head of these cattle have been made into Mexico during the last year. Since cattle in Brazil are more or less continuously exposed to the danger of foot-and-mouth disease, officials

of the USDA, as well as western cattle raisers, were seriously concerned that this disease might be introduced into Mexico and thence into the United States.

Mexico ordinarily ships to the United States between 300,000 and 500,000 head of light cattle each year. They are put on pastures and in feedlots in the western and middle western parts of the country. Because of costly experience with past invasions of foot-and-mouth disease, it was felt that these imports carried a serious menace to the United States livestock industry. Consequently, in order to permit the detection of the disease in any recently exposed animals, a special quarantine was established on June 5, requiring cattle to be held at the Mexican border for fifteen days before entry into the United States.

Early in July, the President of Mexico, Avila Camacho, wrote to President Truman urging the removal of the quarantine, which had practically stopped livestock imports from Mexico into the United States. President Camacho proposed that a joint survey be made by United States and Mexican veterinarians to determine whether foot-and-mouth disease actually had been introduced into Mexico.

In reply, President Truman pointed out the reasons for the quarantine and agreed in principle to sending such a technical mission. He then requested the U. S. section of the Mexican-United States Agricultural Commission to discuss the technical aspects of the survey with the Mexican representatives at the Commission's meeting in Los Angeles during July.

At this meeting, a resolution was passed recommending that a joint veterinary survey be made beginning September 1, with particular reference to foot-and-mouth disease. It was the understanding that if no disease was found to exist, the United States would consider lifting of the quarantine. The Commission also recommended that no further cattle or other livestock be imported from areas where foot-and-mouth, or similar rapidly spreading, infectious diseases are prevalent except through mutually approved international livestock quarantine stations. Such a station is to be established shortly by the United States on Swan Island, about 100 miles north of Honduras in the Caribbean Sea, and will provide a safe means of importing new blood into the United States as well as into Mexico.

The United States veterinary representatives proceeded to Mexico as agreed, and spent over a month inspecting herds of cattle that had been in contact with the zebu importation of last fall, as well as the more recent shipment. No signs of the disease were found and, consequently, the quarantine (in keeping with President Truman's letter of July 17) was lifted October 18. This will permit resumption of importations from Mexico under the same requirements as were applicable before the special quarantine became effective June 5.

Distribution of Streptomycin.—The advisory committee of the Streptomycin Producers Industry has recommended to the Civilian Production Administration further relaxation of controls on distribution of the drug. It was suggested that controls be limited to making allocations for use by the government agencies, for export, and the earmarking of a specified percentage of production for any sudden rise in demand such as might result from a more general use of streptomycin in the treatment of tuberculosis.

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Penicillin in Canine Leptospirosis—Its Procurement.—Penicillin alone or in combination with antiserum is reported by Murphy (*Vet. Rec.*, Aug. 10, 1946)) to give prompt response in canine leptospirosis. The recommended dose was 10,000 units intramuscularly every three hours day and night until 200,000 units have been injected. If started early in the morning, the course will extend only through two nights. By the end of the course, the icterus has disappeared, as a rule. A fat-free diet and glucose were beneficial in maintaining strength.

The Minister of Supply (*ibid*, Aug. 17) as of the end of July, arranged for the procurement of penicillin by veterinary surgeons, "for the treatment of bovine mastitis," at specified sources for that purpose. Forty manufacturers or jobbers have been granted the necessary license.

AMONG THE STATES AND PROVINCES

Arizona

Personal.—Dr. L. N. Butler (KSC '37) was appointed veterinarian in charge of the livestock exhibits at the State Fair Week held early in November in Phoenix. Dr. J. C. McGrath was selected veterinarian for the horse racing.

s/R. E. McCOMB, JR., *Secretary.*

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Arkansas

AVMA Attendance.—Arkansas is taking a timely and lively interest in livestock and so are its graduate veterinarians, says Correspondent Hurlbut of Yellville. Six members represented the state at the Boston meeting, a good batting average for any state, he adds.

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Alabama

Leibold at Auburn.—With quiet dignity, hardly known to his closest friends, Dr. A. A. Leibold (OSU '11), longtime bacteriologist of W. F. Straub & Company, Chicago, joined the faculty of Alabama Polytechnic Institute as professor of veterinary pathology in October. Dr. Leibold was professor of pathology at the Chicago Veterinary College when he entered

the Veterinary Corps of World War I. On arrival in France, he was charged with organizing and commanding a veterinary research

—*Veterinary Military History*

Captain/Major A. A. Liebold of the A.E.F. 1918; Professor of Pathology, Department of Veterinary Medicine, Alabama Polytechnic Institute, 1946.

laboratory in connection with the first veterinary hospital of the expedition. Veterinary education and Auburn in particular are to be congratulated for having found Leibold.

California

Meat Inspection Service Needs Veterinarians.—Examinations will be held Jan. 25, 1947, for veterinarians to fill positions in the meat inspection service of the California State Department of Agriculture. Applicants must be graduates of veterinary colleges of recognized standing and United States citizens; California residence is not required. Veterans may apply for certain preferences as provided under state law. The entrance salary is $280 per month with provision for annual increases of $15 per month, provided the employee's performance rating is satisfactory, until a maximum of $340 is reached. Those interested should write immediately to the State Personnel Board, 1015 L Street, Sacramento, for application forms. The final filing date is Jan. 4, 1947.

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Livestock Pathologist Needed.—Examinations will be held in Sacramento, San Francisco, and Los Angeles Jan. 26, 1947, for an assistant livestock pathologist. The salary range is from $280 to $340. Applications must be filed by January 7 and may be mailed to the State Personnel Board, 1015 L Street, Sacramento.

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Losses from Brucellosis.—Dr. A. R. Carr, chief of the Division of Animal Industry (*California Wool Grower*, Oct. 29, 1946), estimates that the losses from brucellosis in the state are around $60,000,000 annually, and that the disease greatly increases the cost of livestock production.

Georgia

Annual Meeting.—The North Georgia Veterinary Medical Association held its annual meeting Oct. 30, 1946, at Gainesville in the new laboratory for poultry pathology built by this city and Hall county. In addition to several papers and films and a large and small animal clinic, the program featured a thirty-minute radio broadcast on poultry, cattle, and equine diseases from the new laboratory. Members of the association visited one of the largest poultry-packing plants in that section.

Officers elected for the coming year are: Dr. J. L. Hopping, Jr., *president;* Dr. R. F. Thomas, *vice-president;* and Dr. Chas. C. Rife, *secretary-treasurer.*

S/CHAS. C. RIFE, *Secretary.*

Illinois

Officers Elected.—At the Mississippi Valley Association's annual meeting at Galesburg on November 7 and 8, the following officers were elected: Dr. A. M. Orum, Carthage, *president;* Dr. W. J. Angerer, Atkinson, *vice-president;* and Dr. H. R. Hornbaker, Galesburg, *secretary-treasurer.*

The program for the meeting appeared in the December JOURNAL.

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Eastern Meets at Champaign.—Dr. W. A. Young, managing director of the Chicago Anti-Cruelty Society, spoke to the Eastern Illinois Veterinary Medical Association at its meeting on November 18. Veterinarians and their wives enjoyed dinner at the Hotel Tilden Hall before the program.

• • •

IAA Adds Veterinarian to Staff.—Dr. C. D. Van Houweling (ISC '42), recently discharged from the army veterinary corps, has been named head of the Illinois Agricultural Association's new veterinary medical relations department. His duties will be chiefly to maintain and improve the friendly relations between farmers, agricultural advisers, and veterinarians; and to act as technical adviser in prevention and control of animal diseases.

Dr. Van Houweling is a native of Iowa having been born on a farm in Mahaska county. He practiced in central Illinois before joining the army veterinary corps in which he served for three years. He was last stationed at the Kansas City, Kan., quartermaster depot.

Anti-Cruelty Society Meeting.—The annual meeting of the Anti-Cruelty Society was held Dec. 7, 1946, and included an open house at the society's offices, 157 W. Grand Ave., to which the public was invited. Reports of the officers and the manager were followed by a discussion of plans for works of kindness in the coming year. A memorial honor tribute was paid Horace C. and Marion E. McConnell. A forty-minute colored motion picture, "Wild Life at Rinaldi," completed the afternoon program.

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December Meeting.—The Chicago Veterinary Medical Association met at the Palmer House on December 10. The committee had arranged an excellent program including the following features: Dr. Wayne Riser, who discussed, with the aid of slides, "Surgery of the Mammary Gland," and a colored film entitled "Treatment of Wounds of Violence." Mr. Pete Jans was present to answer questions on the insurance plan.

At the ladies' Christmas party, the following were hostesses: Mrs. Christensen, Mrs. Klussendorf, Mrs. Cyrog, and Mrs. Hardenbergh.

s/ROBERT C. GLOVER, *Secretary.*

The Chicago Veterinary Medical Association

In Commemoration of its—

FIFTIETH ANNIVERSARY

has caused to be inscribed herein the names of:

(Living at date of Fiftieth Anniversary)

being the Charter members, who on November 19, 1896, formed

The Chicago Veterinary Society

changed to

The Chicago Veterinary Medical Association

on June 15, 1916, for the purpose of forming an association for the mutual benefit of its members, both intellectually and socially, and for the elevation of the profession generally.

Dated at Chicago, Illinois, this Twelfth day of November 1946.

The above is a facsimile of the handsome certificate commemorating the fiftieth anniversary of the Chicago Veterinary Medical Association held in November, 1946. The certificate is an illuminated scroll, 21 by 16 inches, and will hang in one of the buildings of the new School of Veterinary Medicine at the University of Illinois.

• • •

Chicago Holds Pompous Horse Show.—The annual horse shows at the Coliseum, 15th and Wabash Sts., discontinued some thirty years ago when the International took over, have been revived under the sponsorship of the Chicago Horse Show, Inc., a nonprofit, charity corporation. The show held October 2 to 10 drew 500 horses, and many more had to be rejected for lack of facilities. The entries of the riding and harness class were over-filled, the management reports. The audiences ranging from 4,000 to 7,000 were entertained with the usual pageantry that only horse shows can provide. The passing-of-the-horse, habitual idea of our time, didn't seem to ring true that week.

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"The International" of '46.—After a lapse of five years due to the war, the International Live Stock Exposition opened its doors again at the amphitheatre, 42nd and Halsted streets, Chicago, on Saturday, Nov. 30, with 10,400 animals from 41 states and Canada, valued at $5 million, on exhibition. Premiums presented amounted to $100,000, and more than 125,000 persons, mostly Chicagoans, passed the turnstile. The usual dapper horse shows were held nightly, plus five matinees. Many of the entries of the October horse show at the Coliseum moved to the palatial quarters provided at the Live Stock show. Four-H clubs accounted for 350 of the steers entered. Breeds represented were: cattle 4, sheep 11, hogs 9, and draft horses 5, not including the hackneys, hunters, saddle, and light harness horses of the show ring. Together with exhibits of meat cuts, hay, grain, and other agricultural products allied to livestock farming, the 47th International made up an amazing display of postwar American agriculture.

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Wins Squibb-Ciba Award.—The Association for the Study of Internal Secretions announced Carl G. Hartman, Ph.D., University of Illinois, Urbana, as one of the winners of the Squibb-Ciba prize for fundamental work on the physiology of reproduction. Martin M. Hoffman, Ph.D., McGill University, was granted similar honor for work on the metabolism of estrogens and progesterone, and other endocrine studies.

Indiana

Short Course in Pest Control.—Purdue University sponsored a short course on pest control by the Department of Entomology. Cooperating were the U. S. Fish and Wildlife Service, U. S. Department of Public Health, many sanitary engineers, and the Indiana State Board of Health. Rats and insect pests as economic and health factors were top subjects.

Iowa

East Central Society.—Forty-one veterinarians from 15 counties attended the dinner meeting of the East Central Iowa Veterinary Medical Society at the Hotel Roosevelt, Cedar Rap-

ids, Nov. 14, 1946. On the scientific program, Dr. G. A. Hawthorne, Clarinda practitioner and state regulatory official, spoke on swine erysipelas. Dr. J. W. Giffee, Cedar Rapids, federal swine disease specialist, led the discussion.

Case reports were presented by Drs. Maurice S. Larson, Keystone; Howard B. Stalnaker, Edgewood; James D. Ramsey, Tipton; and John W. Carey, West Liberty.

Officers unanimously elected for the following year are: Dr. Leonard A. Bowstead, *president;* Dr. Allen J. Lang, Iowa City, *vice-president;* and Dr. Orlo L. Haight, *secretary-treasurer.*

• • •

Officers for 1947.—At the meeting of the Midwest Small Animal Hospital Association at Burlington on November 14, the following officers were elected: Dr. W. C. Glenney, Elgin, Ill., *president;* Dr. Russell J. Beamer, Ottumwa, Iowa, *vice-president;* and Dr. Wayne H. Riser, Evanston, Ill., *secretary-treasurer.*

Kansas

Junior Chapter.—More than 60 members were initiated into the Kansas State College junior chapter of the AVMA in October. The initiation ceremony was conducted by upper classmen.

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District VIII Meeting.—Dr. J. C. Carey of West Liberty, Iowa, was the principal speaker at the meeting of District VIII veterinarians at the Goodlander Hotel, Fort Scott, on November 15. His subject was "Diseases of Cattle," and he spoke in the afternoon and again in the evening on his subject. A dinner and an evening of good fellowship were planned for members and their families.

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Personal.—Dr. John S. Haley (KSC '38) of Minneapolis, Kan., is now associated with the Bower Animal Clinic and Hospital in Topeka. Dr. W. E. Daseler (KSC '42), for the past four years associated with the Bower Clinic, has moved to his home state, California, to open a practice there.

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"With Our Veterinarians."—Each issue of *The Kansas Stockman,* a monthly journal devoted to the interests of the state's livestock industry, contains a column headed "With Our Veterinarians." The column is edited by Dr. C. W. Bower of Topeka and offers discussions on livestock health topics of current importance. Much of the information contained in Dr. Bower's column comes from prominent veterinarians who are thoroughly familiar with the problems of Kansas stock raisers.

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Insect Control Program.—On Nov. 26, 1946, under the direction of Dr. E. G. Kelly, extension entomologist, Kansas State College, Manhattan, a program on cattle grub and cattle lice control was held. Among those participating in the radio program and demonstrations was Mr. Ray L. Cuff of the National Livestock Loss Prevention Board, Kansas City, Mo. Mr. Will J. Miller, state livestock sanitary commissioner, Topeka, spoke on the part played by the commissioner in the control program.

Massachusetts

November Meeting.—The Massachusetts Veterinary Association held its regular meeting at the Hotel Statler, Boston, on November 20. Dr. G. B. Schnelle of Boston spoke on "Recent Developments in Small Animal Practice." Dr. R. N. Shaw of Shrewsbury discussed "The Western Horse" (with illustrations), and Dr. B. S. Killian, Somerville, showed motion pictures of a rodeo in Sheridan, Wyo.

s/H. W. JAKEMAN, *Secretary.*

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Milk-borne Diseases Decline.—Director Feemster of the Massachusetts Department of Public Health (*Am. J. Pub. Health,* July, 1946), from a survey of milk-borne diseases for 1941 to 1945 made to reveal the impact of war on that type of infections, found that, despite the shortage of personnel and generally disturbed conditions, the decline of such diseases continued throughout the period. Only three outbreaks traced to milk occurred during the war. The data were gathered by means of questionnaires to which 162 communities responded. The author estimated that about 95 per cent of the milk of the state is pasteurized.

Michigan

Personal.—Dr. John W. Patton, biochemist of East Lansing, has been engaged by the United Nations Relief and Rehabilitation Administration to take charge of a laboratory of biological production at Shanghai, China, and is (November) on the way to his new post.

• • •

Michigan-Ohio Association Meets.—Members and their wives met at the Family Inn, Adrian, Mich., for a turkey dinner before the semi-annual meeting of the Michigan-Ohio Veterinary Medical Association on November 19.

President A. H. DeGroot introduced Dr. P. L. Hannawalt of Ann Arbor, who opened the discussions with a talk on ear trouble in the dog. Dr. Harold W. Kirk presented some of the problems confronting young veterinarians. The story of his own part in the development of the Shore Farm poultry plant was related by Dr. Henry P. Eames of Manchester.

Participants in a panel discussion on cattle diseases, with special emphasis on foot rot and shipping fever, were: Dr. E. C. W. Schubel, Blissfield, leader; Drs. Chas. H. Coy, Hillsdale; Glen F. Carr, Lyons, Ohio; and J. C. Schwabland, Blissfield.

s/FRANK THORP, JR.

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Personal.—Dr. and Mrs. Dennis Hage of Ida observed their golden wedding anniversary with a family dinner and open house on October 20. Dr. Hage had practiced for thirty-two

years in Ida, retiring in June, 1946. Dr. Charles DeLand, recently discharged from the army, has taken over the practice.

Missouri

Short Course.—The College of Agriculture, University of Missouri, coöperating with the Missouri Veterinary Medical Association, held its twenty-second annual short course for graduate veterinarians at Columbia Nov. 4 to 6, 1946. The program, attended by 125 veterinarians, featured the following speakers:

Dr. Banner Bill Morgan, University of Wisconsin, Madison: "Trichomoniasis of Cattle."

Dr. C. W. Bower, Topeka, Kan.: "Leptospirosis in Dogs."

Dr. J. W. Cunkelman, Michigan State College, East Lansing: "Mastitis, Diagnosis and Treatment."

Dr. L. M. Hutchings, Purdue University, Lafayette, Ind.: "Brucellosis of Swine."

Dr. H. E. Curry, state veterinarian, Columbia: "Livestock Regulatory Measures."

Dr. H. C. McDougle, College of Agriculture, University of Missouri: "Newcastle Disease of Fowl."

Dr. S. W. Haigler, St. Louis: "Disease of the Eye of the Dog."

Dr. C. W. Bower, Topeka, Kan.: "Our AVMA."

Demonstrations and operations in the large and small animal clinics were performed by Drs. J. W. Cunkelman, Banner Bill Morgan, C. W. Bower, S. W. Haigler, R. C. A. Costello, B. E. Stickrod, O. S. Crisler, L. M. Hutchings, and R. F. Gentry.

A panel discussion on veterinary practice led by Dr. S. W. Haigler concluded the course. Members of the panel were: Drs. J. W. Cunkelman, Banner Bill Morgan, C. W. Bower, L. M. Hutchings, F. L. Seevers, and H. C. McDougle.

s/J. L. WELLS, *Secretary.*

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St. Louis Meeting.—An excellent program was planned for the members of the St. Louis Veterinary Medical Association on December 6. Dr. S. W. Haigler spoke on "The So-Called Mixed Bacterial Infection in Dogs." Dr. J. P. Torrey discussed "Aspects in Veterinary Practices."

s/C. W. DARBY, *Secretary.*

• • •

Kansas City Association Meets.—Dr. A. W. Deem of the Colorado Veterinary College, Fort Collins, Colo., was the guest speaker at the November 19 meeting of the Kansas City Veterinary Medical Association. His subject was "Feed Lot Diseases of Lamb," and he showed pictures to illustrate the various feed lot plagues. A general discussion followed this presentation.

s/G. B. SMITH, *Secretary.*

Nebraska

Golden Anniversary.—The Nebraska State Veterinary Medical Association celebrated its fiftieth anniversary at the annual meeting at Lincoln Dec. 11 and 12, 1946. After an address by the president, Dr. W. I. Nelson of Herman, the following guest speakers were presented:

Dr. Carl Olson, Jr., chairman, Department of Animal Pathology, University of Nebraska, Lincoln: "Diseases of Poultry."

Dr. C. S. Bryan, Michigan State College, East Lansing: "What Is Mastitis?" and "The Treatment of Mastitis."

Dr. M. H. Roepke, University of Minnesota, St. Paul: "Ketosis of the Dairy Cow."

Dr. E. R. Frank, Kansas State College, Manhattan: "Illustrated Lecture on Surgery."

Dr. K. W. Smith, practitioner, Sioux City, Iowa: "Small Animal Practice."

Dr. H. C. H. Kernkamp, University of Minnesota, St. Paul: "Diseases of Swine Due to Nutritional Deficiency."

A cattle forum, conducted by Dr. J. D. Ray of the Corn States Serum Co., Omaha, consisted of the following participants: Dr. P. Phillipson, Holbrook; Dr. S. W. Phillips, David City; Dr. J. D. Cady, Arlington; Dr. Frank Breed, Lincoln; and Prof. W. J. Loeffel, chairman, Department of Animal Husbandry, University of Nebraska.

The swine forum was conducted by Dr. Frank Breed, Norden Laboratories, Lincoln. Completing the panel were Dr. H. C. H. Kernkamp, University of Minnesota; Dr. J. D. Ray, Omaha; Dr. J. E. Peterson, Lincoln; and Dr. O. H. Person, Wahoo. Members and visitors participated in both forums.

The banquet speaker was Dr. James M. Reinhardt, professor of Sociology at the University of Nebraska and author and consultant in the fields of psychology and criminology. His subject was "Human Nature, Fact and Fiction."

s/PAUL MATTHEWS.

Nevada

Stock Pest Control Campaign.—The extension service of the University of Nevada called a meeting of livestock men on December 4 and 5 at Elko to explain and demonstrate the newest methods of controlling livestock pests. Statewide coverage is the aim of this new educational program just launched.

New Jersey

Personal.—Dr. Martin S. Oster (UP '46), Atlantic City, upon his return from Poland, where he was on duty for UNRRA, was commissioned as a first lieutenant in the U. S. Army Nov. 19, 1946. He was assigned to field headquarters in Chicago.

New Mexico

Annual Meeting at Clovis.—The New Mexico Veterinary Medical Association held its thirteenth annual meeting Oct. 21 and 22, 1946, at Clovis, N. M. After the president's address by Dr. C. A. Curtis, Albuquerque, the following speakers were presented:

Mr. G. A. Grimes, president, New Mexico County Agents Association: "How County Agents Can Coöperate with Veterinarians to Better Serve the Livestock Industry."

Dr. W. L. Black, Portales: "How Veterinarians Can Coöperate with County Agents to Better Serve the Livestock Industry."

Dr. A. L. Hershey, State College: "What Shall We Do about Poisonous Plants?"

Dr. I. H. Roberts, Albuquerque: "Report on the AVMA Meeting."

Dr. Jean C. Flint, Salt Lake City, Utah: Fractures in Small Animals," and "Small Animal Problems."

Dr. R. J. Helvig, Dallas, Texas: "U. S. Public Health Ordinance and Some Phases of Milk Inspection." (With film.)

Dr. R. Scott Jackson, Fort Collins, Colo.: "Laboratory Procedures Every Veterinarian Should Know and Use in Every Day Practice."

Dr. C. D. Folse, Kansas City, Kan.: "Newer Chemotherapeutic Agents and Their Application to Veterinary Medicine."

Dr. L. E. Washburn, Fort Collins, Colo.: "Nutrition as It Affects Production and Reproduction."

Banquet speakers were Dr. Jean C. Flint of Salt Lake City, Utah, and Honorable Carl A. Hatch, senator from New Mexico.

The new officers for 1947 are as follows: Dr. W. L. Hatcher, Cimarron, *president*; Dr. Fred Sharp, Albuquerque, *vice-president*; Dr. S. W. Wiest, Santa Fe, *secretary-treasurer*.

s/S. W. WIEST, *Secretary*.

New York

New York City Association.—The December 4 meeting of the Veterinary Medical Association of New York City held at the Hotel Pennsylvania featured a symposium on "Pyometra in Bitches." Dr. Charles Fletcher, moderator, discussed diagnosis of the disease; Dr. Frank Bloom its pathology; and Dr. Gerry B. Schnelle of Boston the treatment.

s/C. R. SCHROEDER, *Secretary*.

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Borden Award.—The 1946 Borden award ($1,000 and a gold medal) for distinctive contributions to poultry science went to Dr. F. B. Hutt, professor of animal genetics at Cornell University. The citation points to "outstanding work in genetics and poultry breeding."

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Dog Training.—A motion picture film, "Training You to Train Your Dog," has been prepared and may be obtained for showing to groups, free of charge, by contacting Gaines Dog Research Center, 250 Park Ave., New York 17, N. Y.

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Zoo Veterinarian Featured in Look Magazine.—Dr. Patricia O'Connor, who ministers to the needs of over 600 animals in the Staten Island Zoo, was the subject of a feature story in the November 12 issue of *Look*. Pictorially, the story told of the animals she treats every day and listed her other duties which include

From Look—America's Family Magazine

Minnie, the Philippine Macaque monkey, proves to Dr. O'Connor that she can take her medicine like a lady.

research, lectures to clubs, school talks, and the instruction of children's classes at the zoo.

Ohio

The Wayne County Fair.—A retired Wayne County farmer on a visit to the AVMA office the other day mentioned that the horse exhibit at the Wayne County Fair in September was the largest and best in his forty years of observation. Wayne County, Ohio, was once one of the famous horse centers of the U. S. A. and has been rated by agricultural economists as one of the three best farming counties in America. And another thing, Wayne County had the only building and loan association in the state (so the story goes) that didn't need help after the crash of '29. Figure that one out.

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Plane Radioed for Hay.—When an airplane approaching the new Mansfield airport radioed for "fuel and hay," the attendants were puzzled until they learned after the landing that the cargo was horses.

Oklahoma

Livestock Pest Control Conferences.—The unanimous approval by state directors of experiment stations of a plan to bring pest control problems to regional meetings brought

about two livestock pest control conferences recently. One was held at Oklahoma City on Oct. 21 and 22, 1946, and the other at Cheyenne, Wyo., on October 24 and 25. Representatives from every state west of the Mississippi River except California and Minnesota were present and included entomologists, veterinarians, animal husbandmen in fields of research and extension, and administrators and county agents. Topics discussed after presentation of research results from federal and state sources were: cattle grubs, lice, flies, and other livestock pests (screw-worms, ticks, etc.).

Oregon

Elections. — The Oregon State Veterinary Medical Association met at Beaverton on Sept. 27, 1946. New officers for 1947 are Dr. Norman E. Johnson, Beaverton, *president*; Dr. James Adams, Oregon City, *vice-president*; and Dr. Walter W. Weller, Ashland, *secretary-treasurer*.

In addition to many excellent papers by members of the association, final drafts of a number of amendments to be presented at the next session of the legislature were read. Considerable discussion resulted from the recent appointment of a layman as head of the Oregon Livestock Sanitary Board, and the association unanimously voted to appeal to the governor for a state veterinarian.

s/WALTER W. WELLER, *Secretary*.

Pennsylvania

Joint Meeting.—The Northwestern and Western Pennsylvania Veterinary Medical Societies held a joint meeting Nov. 20, 1946, at Herrs Island. Dr. C. P. Zepp was the guest speaker on the subject of "Small Animals."

s/G. B. SCHUEY, *Secretary*.

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Veterinary Alumni Society Celebrates.—The Veterinary Alumni Society celebrated its fifty-ninth anniversary on Victory Alumni Day, June 8, 1946. An attendance of 145, the largest on record, was announced. The celebration took the form of clinic and demonstrations at the veterinary school. The society presented a plaque in honor of the late Clarence J. Marshall for the Clarence J. Marshall Memorial Library which was accepted by Dean R. A. Kelser of the School of Veterinary Medicine. Luncheon was served at the Alpha Psi fraternity house, President S. F. Scheidy presiding. The Alumni Society has 495 members. The following officers were Elected: Hiram T. Gaetz, '03 *president*; John D. Gadd, '32, *first vice-president*; H. Robert Becker, '36, *second vice-president*; E. T. Booth, '09, *secretary-treasurer*; Donald G. Lee, '36, *editorial board representative*; D. R. Detweiler, '41, *historian*.

South Dakota

Annual Meeting at Sioux Falls.—The South Dakota Veterinary Medical Association met at Sioux Falls Dec. 11 and 12, 1946. Following the president's address by Dr. I. A. Oelrich of Lennox, these speakers appeared on the program:

Dr. R. C. Klussendorf, assistant executive secretary, AVMA, Chicago: "Calfhood Diseases."

Dr. J. S. Koen, BAI, Storm Lake, Iowa: "Diseases of Swine."

Dr. A. B. Hoerlein, South Dakota State College, Brookings: "Ringworm Infection of Animals."

Dr. G. S. Harshfield, college veterinarian, South Dakota State College: "Diseases of Sheep."

Dr. G. R. Moore, Kansas State College, Manhattan: "Handling Reproductive Problems in Practice."

Dr. A. R. Schmidt, practitioner, Triumph, Minn.: "Diseases of Cattle."

Dr. C. D. Lee, Iowa State College, Ames: "Poultry Diseases."

Dr. Neil Plank, inspector in charge, BAI, Pierre: "Brucellosis Control in South Dakota."

Dr. R. S. Robinson, state veterinarian, Pierre: "Disease Conditions in South Dakota during 1946."

Officers elected for the coming year are: Dr. R. F. Freeman, Canton, *president;* Dr. O. H. Stalheim, Vermillion, *vice-president;* and Dr. J. T. McGilvray, Sioux Falls, *secretary-treasurer*.

s/J. T. MCGILVRAY, *Secretary*.

Tennessee

Research on Sulfonamides in Fowl Typhoid.—The Department of Bacteriology, University of Tennessee, has received a grant from Sharp and Dohme, Inc., for the pursuit of studies on the use of sulfonamides in the treatment of fowl typhoid under the direction of Dr. Holtman, professor of bacteriology.

Washington

Germ-Killer on the Farm.—Ernest C. McCulloch, professor of bacteriology, Washington State College, is the author of a comprehensive article on "Germ-Killers on the Farm" in the September 25 issue of *Hoard's Dairyman*. The gist is the fallacy of disinfecting filth with chemical sprays. Also stressed is the importance of using the right disinfectant when the place is cleaned up.

Wisconsin

Southeastern Association.—The Southeastern Wisconsin Veterinary Medical Association met at the Carlton Hotel in Watertown Nov. 20, 1946. Following a turkey dinner, the veterinarians heard Dr. McNutt and Dr. Underbjerg from the University of Wisconsin who presented a program on viruses and virus diseases.

s/W. W. ARZBERGER, *Secretary*.

Central Wisconsin Association.—Chippewa Falls was the scene of the Central Wisconsin Veterinary Medical Association meeting on Dec. 11, 1946. Guest speakers on the program were Dr. R. H. Guthrie, DeLaval experiment veterinarian of Chicago, who spoke on "Mastitis," and gave a demonstration in fast milking with rubber udder and complete units, and Dr. Fred C. Driver, inspector in charge, USBAI, St. Paul, Minn., whose subject was "Field Observations of the Use of *Brucella abortus* Vaccine in Calves and Cows and Post-Vaccination Titers."

At the banquet at the Hotel Northern, Dr. J. S. Healy of Madison was toastmaster, and Mr. W. G. Ballentine, superintendent of schools, Menomonie, addressed the members.

s/S. K. ANDREASSEN, *Secretary.*

FOREIGN

Colombia

Veterinarian Receives Fellowship.—Dr. Jose Gonzalez Alvarez, Cartagena, has been awarded a fellowship at the Utah State Agricultural College. Before coming to the United States, Dr. Alvarez was with the Ministry of Work, Hygiene, and Public Health as a hygienist veterinarian in Cali, capital of the state of Valle del Cauca, working in campaigns against rabies, tuberculosis, and infectious abortion of dairy cattle.

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Silver Anniversary at Bogotá.—In May of 1946, the faculty of Veterinary Medicine and Zoötechnics of the National University of Colombia observed its silver anniversary. The faculty was founded in 1921 by Roberto Plata G., Charles Noback of the United States, Ismael Gomez Herran, and Idlefonso Perez Vigueras in a country then backward in its cattle industry. Today, with more than 13 million head of cattle, Colombia can be justly proud of the pioneer veterinarians who participated in raising the standards of this industry.

The president of Colombia, Dr. Alberto Lleras Camargo, decorated Dr. Jose Velasquez Q., dean of the faculty, with the Cross of Boyaca, the highest decoration in Colombia, granted by the government for the group's services to the country. Degrees were conferred on 67 university students. President Camargo officiated. The ex-deans were also honored by diplomas of gratitude from the university. The present faculty was honored by many associations, as well as by the government and private laboratories, with awards of books, priceless works of art, and valuable purebred animals for the faculty herd.

More than 100 veterinarians, as well as Ministers of the Cabinet, university directors, presidents of associations of animal breeders, and representatives of the sheep industry, were present at the banquet for the President of the Republic held at the Hotel Granada at Bogotá.

s/DR. CARLOS ALBERTO ROJAS MALDONADO,
AVMA Secretary, Colombia.

Greece

Professors Needed.—The Greek government is formulating plans for the creation of a veterinary school as a branch of either the University of Athens or Salonica. There is a need for experienced American professors under the categories listed as follows: (1) anatomy, embryology, histology; (2) medical pathology,

A group of graduates in veterinary medicine receiving their degrees from the President of Colombia in the Great Hall of the National Faculty of Veterinary Medicine and Zoötechnics on May 10, 1946, at Bogotá, Colombia.

jurisprudence, and clinic; (3) surgical pathology, hoof surgery, surgical medicine; (4) physiology, general therapeutics; (5) general pathology, physiologic anatomy, meat inspection, and control of products of animal origin.

Financial arrangements will be made with the candidates who qualify in one of the above mentioned fields and who desire to go to Greece for a period of at least two years. Address replies to Dr. B. Hadziolas, Greek Embassy, Washington, D. C.

Dutch East Indies

Soldier on Foreign Duty.—This soldier in the Dutch Army is a nephew of Dr. Chas. H. Haasjes, Shelby, Mich., who is on duty at Malakka, Dutch East Indies.

Nephew of Dr. Chas. Haasjes, Shelby, Mich.

New Zealand

Socialized Veterinary Medicine*.—An AVMA member who has practiced for several years in New Zealand writes: "Owing to a shortage of veterinary surgeons, farmers' clubs were organized to attract practitioners to this country, offering a salary seemingly attractive to the newcomer, and thereby creating a veterinary service at a lower cost by distributing the expense over the entire membership through subscription fees. The management of these clubs is entirely under the control of laymen who also have complete control of the veterinary surgeons by means of contracts. They are endeavoring eventually to control the veterinary profession by gaining the government's support and making the scheme nationwide.

The present legislature is expected to pass laws that will nationalize the veterinary service whereby a levy will be made on animals in different ways, depending on the kind. The government will then subsidize the farmers' clubs, dairy companies, and (it is said) the private practitioners. In the case of the latter, a committee will have to approve them before a subsidy can be allowed. Who will constitute the committee I am unable to ascertain. That is the state of the veterinary profession in this country as I see it.

Immediately after being released from the manpower regulation, I endeavored to return to the States but was unable to do so. . . . This is no place for me. I cannot seem to accustom myself to the manner in which this socialized form of government is applied. There are too many restrictions and too many licenses which tend to protect the inefficient and suppress initiative."

*Because the correspondent did not specifically request the publication of his letter, his name is withheld.—*Ed.*

Peru

Veterinary College Created.—At Lima in March, 1946, a veterinary college was instituted as one of the San Marcos University Colleges, Dr. Jose Santivanez was chosen first dean of the new school.

Dr. Jose Santivanez, Dean

COMING MEETINGS

Cornell University. Annual Conference for Veterinarians. New York State Veterinary College, Ithaca, Jan. 2-4, 1947. W. A. Hagan, New York State Veterinary College, dean.

Alabama Polytechnic Institute. Conference for Veterinarians. Alabama Polytechnic Institute, Auburn, Jan. 2-4, 1947. R. S. Sugg, School of Veterinary Medicine, Auburn, Ala., dean.

California State Veterinary Medical Association. California Polytechnic School, San Luis Obispo, Calif., Jan. 6-8, 1947. F. H. White, Grand Ave. at 3rd St., San Rafael, Calif., secretary.

Minnesota State Veterinary Medical Society. Jan. 6-8, 1947. H. C. H. Kernkamp, University Farm, St. Paul 8, Minn., secretary-treasurer.

University of Pennsylvania. Annual Conference for Veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Jan. 7-8, 1947. R. A. Kelser, School of Veterinary Medicine, dean.

Ohio State Veterinary Medical Association. Deshler-Wallick Hotel, Columbus, Ohio, Jan. 8-10, 1947. F. J. Kingma, Veterinary Laboratory, Ohio State University, Columbus 10, Ohio, secretary.

Kansas Veterinary Medical Association, Wichita, Kan., Jan. 13-14, 1947. C. W. Bower, 3119 Stafford St., Topeka, Kan., secretary-treasurer.

Oklahoma Veterinary Medical Association, Skirvin Hotel, Oklahoma City, Okla., Jan. 13-14, 1947. C. H. Fauks, 505 Leonhardt Bldg., Oklahoma City 2, Okla., secretary-treasurer.

Tennessee Veterinary Medical Association, Noel Hotel, Nashville, Tenn., Jan. 13-14, 1947. A. C. Topmiller, 2620 8th Ave., S., Nashville, Tenn., secretary.

Intermountain Veterinary Medical Association. Jan. 13-15, 1947, Salt Lake City, Utah. M. L. Miner, Dept. of Veterinary Science, Utah State Agricultural College, Logan, secretary-treasurer.

Wisconsin Veterinary Medical Association. Park Hotel, Madison, Wis., Jan. 15-17, 1947. B. A. Beach, Genetics Bldg., University of Wisconsin, Madison 6, Wis., secretary.

Indiana State Veterinary Medical Association. Hotel Severin, Indianapolis, Ind., Jan. 16-18, 1947. H. A. Lidikay, Darlington, Ind., secretary-treasurer.

Mississippi Veterinary Medical Association, Jackson, Miss., Jan. 17-18, 1947. Glen D. Gates, Clarksdale, Miss., secretary.

Texas State Veterinary Medical Association. Rice Hotel, Houston, Texas, Jan. 20-21, 1947. E. A. Grist, Box 921, College Station, Texas, secretary.

Iowa Veterinary Medical Association. Hotel Fort Des Moines, Des Moines, Iowa, Jan. 21-23, 1947, C. C. Franks, 602 Capital City Bank Bldg., Des Moines 9, Iowa, secretary-treasurer.

Michigan State College. Annual Conference for Veterinarians. School of Veterinary Medicine, Michigan State College, East Lansing, Jan. 22-23, 1947. Ward Giltner, School of Veterinary Medicine, dean.

Louisiana State University in conjunction with Louisiana Veterinary Medical Association. Annual Short Course for Veterinarians. Louisiana State University, University Station, Baton Rouge, Jan. 29-30, 1947. C. M. Heflin, 2130 Tulip St., Baton Rouge 11, La., secretary.

North Carolina State College. Conference for Veterinarians. North Carolina State College, Raleigh, Jan. 28-31, 1947. C. D. Grinnells, State College Station, Raleigh, N. Car., program chairman.

Kentucky Veterinary Medical Association. Kentucky Agricultural Experiment Station, Lexington, Ky., Jan. 29-30, 1947. C. A. Roll, 827 E. Broadway, Louisville 4, Ky., secretary.

Illinois State Veterinary Medical Association. Leland Hotel, Springfield, Ill., Jan. 29-31, 1947. W. D. Daugherty, 105 7th Ave., Sterling, Ill., secretary.

Institute of American Poultry Industries. Fact Finding Conference. Municipal Auditorium, Kansas City, Mo., Feb. 2-4, 1947. Cliff D. Carpenter, Institute of American Poultry Industries, 110 N. Franklin St., Chicago 6, Ill., president.

Connecticut Veterinary Medical Association. Hotel Bond, Hartford, Conn., Feb. 5, 1947. G. E. Corwin, 36 Capitol Ave., Hartford 6, Conn., secretary.

Veterinary Medical Association of New Jersey. Hotel Sheraton, Newark, N. J., Feb. 6-7, 1947. J. R. Porteus, P. O. Box 938, Trenton, N. J., secretary.

Arkansas Veterinary Medical Association. Little Rock, Ark., Feb. 13, 1946. C. T. Mason, 906 Broadway, Little Rock, Ark., secretary-treasurer.

Colorado A. & M. College. Annual Short Course for Veterinarians. Division of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Feb. 17-19, 1947. I. E. Newsom, Division of Veterinary Medicine, dean.

American Animal Hospital Association. Tulsa, Okla., April 22-24, 1947. R. E. Ruggles, 901 19th St., Moline, Ill., secretary.

American Veterinary Medical Association. Eighty-fourth Annual Session. Netherland Plaza Hotel, Cincinnati, Ohio, Aug. 18-22, 1947. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill., the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Massachusetts Veterinary Association, Hotel Statler, Boston, Mass., the fourth Wednesday of each month. H. W. Jakeman, 176 Federal St., Boston 10, Mass., secretary-treasurer.

New York City Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Saint Louis District Meetings, Roosevelt Hotel, St. Louis, Mo., the first Friday of each month. C. W. Darby, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association. Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

BIRTHS

To Dr. (MSC '40) and Mrs. E. S. Padwee, 661 Bloomfield Ave., Bloomfield, N. J., a son, David Bruce, July 29, 1946.

To Dr. (TEX '39) and Mrs. H. B. Mills, Midland, Texas, a daughter, Linda Frances, Nov. 1, 1946.

DEATHS

★**Charles D. Blaser** (ONT '07), 70, Buffalo, N. Y., died Sept. 2, 1946, after an illness of six weeks. Dr. Blaser had been in practice at Buffalo for almost forty years and was a past president of the Western New York Veterinary Medical Association. He was admitted to the AVMA in 1926.

Ira L. Buchanan (CORN '09), 67, Auburn, N. Y., died Aug. 3, 1946. Dr. Buchanan had been in practice in Auburn for the past thirty-seven years.

L. V. Cummings (KSC '15), 52, Fort Dodge, Iowa, died Sept. 26, 1946, following a serious illness. After his graduation, he opened a practice at Halstad, Kan., but entered government service three years later. He was federal supervisor for the division of virus-serum control at the Fort Dodge Laboratories at the time of his death.

Thomas L. Curran (ST JOS '20), 66, Ottumwa, Iowa, died Aug. 19, 1946, following a heart attack. Dr. Curran had been head of the bureau of animal industry in the Gomez-dictated country of Venezuela from 1930 to 1932. In 1937 and 1938, he was state secretary of agriculture. For the past year, he had been government veterinarian in Kansas City, Mo.

Leo A. Doherty, 59, Milwaukee, Wis., died in November of a stroke suffered while working at the Inter-County Dairy Cattle Association sale at Waukesha. Dr. Doherty was born in Milwaukee county and had been a veterinarian there since 1912.

★**Ralph P. Gingerich** (CVC '13), 58, Los Angeles, Calif., died Feb. 28, 1946. Dr. Gingerich was born Jan. 9, 1888, at Minonk, Ill. He was admitted to the AVMA in 1919.

W. L. Hayes (ISC '21), 53, Neola, Iowa, died Oct. 29, 1946, from a heart ailment. Dr. Hayes had practiced in eastern Iowa for eight years before moving to Neola in 1929.

Joseph H. Lerdal (ISC '27), 40, Dumont, Iowa, died Aug. 29, 1946, after a three-year illness. After receiving his D.V.M. degree, he opened his practice at Dumont which he continued until his health forced his retirement in 1943.

Samuel H. Miller (MCK '02), 81, Rock Island, Ill., died Aug. 26, 1946, from a heart attack. Dr. Miller had practiced veterinary medicine at Rock Island for many years before taking up chiropractic.

J. J. Myhers (MCK '16), Eleva, Wis., died Nov. 17, 1946.

★**Conrad L. Nelson** (KCVC '06), 71, Oklahoma City, Okla., died Nov. 1, 1946, from a cerebral hemorrhage following a prolonged illness. Before establishing private practice in Oklahoma City, from which he had retired eight years ago, Dr. Nelson had served with the USBAI in meat inspection in St. Joseph, Mo., and field work in Oklahoma. Born in Denmark, he had come to America in 1903. He was admitted to the AVMA in 1909.

William Nugent (KCVC '12), 82, Dawson, Ill., died July 16, 1946, following a heart attack. He was official veterinarian of the Buffalo, Ill., Horse Shows Association.

★**Clell B. Perkins** (OSU '12), 60, Johnstown, Ohio, died Nov. 23, 1946. Col. Perkins began his army career in 1917 as a second lieutenant in World War I, attaining the rank of colonel in 1939. In World War II as Theater Veterinarian, Third Army, European Theater, he was awarded the Legion of Merit and the Bronze Star medal. In 1921, he was assigned to the Ohio State University to organize the veterinary section of ROTC. He served there as assistant professor of Military Science and Tactics until 1925 upon assignment to Fort Benjamin Harrison, Ind. He also had served at Fort Benning, Ga., and as Service Command Veterinarian of the Second and Eighth Service Commands. Col. Perkins was admitted to the AVMA in 1934.

Wm. T. Pritchard (KCVC '07), Ashland, Neb., died suddenly on Oct. 23, 1946, while operating upon a puppy. Dr. Pritchard was 73 years old on the day of his death.

W. T. Robertson (MCK '18), 59, Hale, Mo., died in Des Moines, Iowa, Sept. 25, 1946. Dr. Robertson had practiced in Newton, Iowa, for many years before moving to Hale, Mo.

H. A. Selander (KCVC '15), 60, Schleswig, Iowa, died suddenly at his home in Denison,

★Indicates member of the AVMA.

Iowa, Sept. 26, 1946. Dr. Selander had been in practice continuously at Schleswig from his graduation from college in 1915 until the spring of 1944 when poor health forced his retirement.

T. J. Sharpe (ST JOS '23), Central City, Iowa, died Sept. 20, 1946, following a brief illness.

VETERINARY MILITARY SERVICE

Awards and Citiations

Colonel Harold E. Egan, V.C., received the Army Commendation Ribbon "for exceptionally meritorious conduct in the performance of outstanding service as Service Command Veterinarian, Seventh Service Command, Army Service Forces, Omaha, Neb., from Dec. 30, 1945, to June 10, 1946." The citation goes on to commend Colonel Egan's intimate and profound knowledge of all phases of food production and inspection and the value of that knowledge to the Army and industry.

Veterinary Officers Separated from Military Service

Alabama

McCrory, John A.

Arizona

Crump, John A.

Arkansas

Fahr, Robert E.

California

Hoop, Jay Dee
Jobe, Darr
Mynatt, Vernon S.
Taylor, Ernest S.
Walker, John D.
Wion, John E.

Colorado

Carroll, Walter D.
Epling, Glenwood P.
Hoerlein, Benj. F.
Klaich, Nick
Reid, Donald G.
Smith, Earl D.
Utterback, J. A. Jr.
Zancanella, A. T.

Connecticut

Arnold, Maurice W.
Beere, Merritt H.
Leonard, Harmon C.
Vail, John I.
Whitney, George D.

Florida

Reed, Ernest L. Jr.

Georgia

Sikes, James H.

Illinois

Derrer, Lee W.
Guilfoil, Thomas J.
Saunders, Edward C.

Indiana

Waterfall, Clark

Iowa

Becker, Leo F.
Finch, Robert W.
Kopp, Wendell J.
Wallinga, Merrill H.

Kansas

McClurkin, Arlan W.
Mitchell, Kenneth P.
Ripple, William E.
Westerfeldt, M. H.

Louisiana

Upchurch, John W.
Wiswell, Wilbur H.

Maryland

Custer, Franklin D.

Massachusetts

McDonald, E. J. P.

Michigan

Larson, Roy G.
Shull, Albert J.

Missouri

Bailey, Earl G. J.
Crutcher, M. L. Jr.

Nebraska

Brandt, Vincent J.
Peterson, Irvin E.

New Jersey

Fruit, David J.
Scoville, S. H.
Steinbach, Karl F.

New York

Borer, Maurice H.
Elmer, Everett K.
Fish, Richard B.
Goldberg, Abie
Parmelee, R. H. Jr.
Regenbogen, Milton

North Carolina

Blumberg, Victor H.
Brown, James E.

Ohio

Carlin, Louis
Earhart, Robert N.
Glass, Howard R.

Pennsylvania

Weber, Robert B.
Werrin, Nathaniel

South Carolina

Downing, Theo. O.

Texas

Gray, Jack, Jr.
Jones, Francis P.
Milentz, A. R. Jr.
Miller, R. H. Jr.
Phillips, Hugh M.
Young, James B.

Virginia

O'Keefe, Francis A.

Washington

Burke, Henry A.
Hastings, George H.

Wisconsin

Schiller, Alfred G.

Spring Pig Goal.—A goal of 58 million pigs has been set for the 1947 spring crop by the U. S. Department of Agriculture. The need for increased pork production is emphasized in setting the support price at $14.25 per 100 lb., and there is a general expectation that prices higher than this will prevail.

Corrigenda

In the July, 1946 (pp. 25-34), issue of the JOURNAL, the following corrections should be made in the article "The Veterinary Status of Greece and UNRRA Aid in 1945," by Martin M. Kaplan: page 29, line 29, should read ". . . a crystal violet blood vaccine in England[1]. . . ." instead of ". . . a heated blood vaccine in England[1]. . . ." Page 29, line 41, should read ". . . having an average mortality of 10 per cent . . . ." instead of ". . . having an average mortality of 100 per cent. . . ."

Page 29, line 45, should read ". . . by means of methyl violet . . . ," instead of ". . . by means of gentian violet. . . ."

In the September, 1946 (pp. 198-203), issue of the JOURNAL, the following correction should be made in the article "Pulmonary Actinomycosis in Swine," by L. R. Vawter: page 200, line 28, should read "Myceloid or filamentous colonies have not been observed on agar-plate cultures," instead of "Myceloid or filamentous colonies were observed on agar-plate cultures."

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